Appendix 3

DECLARATION OF CHARLES R. PLOTT

I, Charles R. Plott, declare:

1. I am the Edward S. Harkness Professor of Economics and Political Science at the California Institute of Technology in Pasadena, California. My primary research area includes behavioral foundations of economics and political science, laboratory experimental methods, regulation, deregulation and policy design. I have over forty years experience in those fields. I have a Bachelor's degree in Production Management from Oklahoma State University, a Master's degree in Economics from Oklahoma State University and a Doctorate degree in Economics from the University of Virginia. I am the co-author of the study "Forced Information Dislosure and the Fallacy of Transparency in Markets," in which I summarized the results of my experimental economic analysis of the impact on markets, particularly the California electricity market, of the disclosure of private information by market participants. (This study is attached hereto as Exhibit A, and will be published in an upcoming issue of the journal *Economic Inquiry*.) As such, I have special knowledge, skill, experience, training and education necessary to form an opinion on the topic of information disclosure and its effect on the California electricity market.

2. Moreover, the experiments discussed in the study were conducted under my supervision. As such, I have personal knowledge of them and I could testify competently about them if called as a witness. A full description of those experiments is set forth in the study and is incorporated herein by reference.

3. I am making this declaration to explain how revealing to power producers the amount of utility-specific information the Califonia Energy Commission (Commission) intends to disclose will reduce competition and increase prices.

4. My experimental analysis demonstrated that requiring Investor-Owned Utilities (IOUs) to reveal their net-short position to power suppliers will result in higher electricity prices for the public. Knowing residual net short alone is sufficient for suppliers to manipulate

prices. Even if the Commission intends to reveal the capacity net short information three years out from 2006, it will still be relevant, since IOUs routinely procure power five years forward.

5. This proposition follows from two economic facts. First, competitors can deduce the power capacity that the IOUs plan to purchase in the market from knowledge of the residual net short. Second, a natural consequence of knowledge among the power suppliers of the amount of capacity that the IOUs plan to purchase is an increase in the prices that the company will pay. While the amount of any price impact will vary according to the circumstances, the general competitive consequence is in only one direction – price increases. In the case of electricity, this upward pressure can result in substantial price spikes.

6. That higher prices will result follows from well established and well tested principles of market behavior. The tendency is a natural consequence of the strategic behaviors that exist in the marketplace. The failure of regulators to appreciate the fact that strategic behavior is ever present in markets often results in poorly-designed markets that do not properly channel competition into its role of protecting the public. The Notice of Intent to Release Aggregated Data at issue here is a good example.

7. The first question is whether the amount of capacity that the IOUs will purchase can be deduced from knowledge of the net short positions. The IOUs must meet the peak demand (plus reserve requirements) of their customers. They do not know when that peak will occur, but they must have sufficient available capacity to deliver the power when it does occur. Thus, the net short reveals almost exactly how much capacity the IOUs must buy from suppliers.

8. A second question is whether common knowledge of the amount that the IOUs plan to purchase will result in higher prices. The principles at work to produce higher prices have been demonstrated in many different contexts. It is well established that the larger the number of competitors attempting to supply power, the lower will be the prices that the company must pay.

9. Common sense supports the principle. It works through a combination of numbers and uncertainty on the part of each competitor about what other competitors will do.

Each competitor must adjust for that uncertainty through concessions to the buyer. Thus, a reduction in the number of competitors will reduce competition and place upward pressure on prices. Likewise, making critical information available to some competitors (suppliers, in this case) leads to higher prices being paid by others (the customers of the IOUs.)

10. An important fact is that, in essence, those who sell power to the IOUs are in competition with the capacity already contracted for and owned by the IOUs. If the capacity held by the IOUs is known to the sellers, the uncertainty from that competitive source is removed and competition itself is reduced. Thus, a source that holds prices down is removed and the tendency is for prices to increase. Revelation of the IOUs' strategy has the same effect as removing the uncertainty associated with one of the competitors. Revealing IOU confidential net short information would be equivalent to asking one card player in a poker tournament to play his or her hands face up while all other players do not reveal their cards. The cost of poker for the "face up" player would be much higher because the other players would have superior knowledge and could adjust their bets accordingly.

11. In the special case of electricity demand this tendency for prices to increase becomes exacerbated. Because of the nature of the demand for electricity and the company's requirement to meet that demand, knowledge of the quantity that the IOUs plan to purchase is sufficient to reveal economically significant features of their willingness to pay for power.

12. A commonly known, collective "target" is created for suppliers, and if that "target" is reached by the competitive suppliers the prices that all of them will be paid will increase significantly. Thus, in addition to the natural reduction in competition, the information creates incentives among competitors that also foretell upward pressures on prices.

13. Figure 1 and Figure 2 outline the tendency described above in a graphical form.

14. The basic law of supply and demand governs prices paid by the company for power. Figure 1 (attached as Exhibit B) demonstrates the shape of the demand for power faced by the power suppliers. The IOUs' demand for power has a very distinctive shape. It is dictated by the high value of electricity to the consumers, the substantial inelasticity, or insensitivity of consumer demands to price (large variations in price do not influence

consumption patterns) and the sensitivity of customer demand to weather conditions. This creates a peak demand that must be met. The time of that demand is uncertain, so the company must purchase enough capacity to meet the need when it occurs.

15. The key factor is the net short demand – the difference between the electricity supply upon which the company can call and the expected peak demand. The willingness to pay is very high until the capacity to cover the expected peak (including any reserve margin) is reached, and then the willingness to pay drops dramatically due to the inelasticity of demand, the insensitivity of demand to price.

16. The company must meet the peak needs at almost any price, but additional capacity has much less value, since the company has little need to purchase capacity beyond that. The company's net short position reveals that drop in willingness to pay.

17. Figure 2 (attached as Exhibit C) illustrates the source of the incentive for competitive suppliers to adjust their strategies in the light of the information. With net short demand known to them, suppliers have a collective incentive to hold back supply a little in the expectation of pushing up the prices. The suppliers' holding supply a bit results in slightly less resource supply than the net short demand of the company, and this scarce supply relative to demand has a collective impact of increasing prices sharply.

18. Each supplier, realizing the incentives of other suppliers, has a reinforced incentive to raise prices bid in the competitive solicitation. Furthermore, as the solicitations proceed in time the needs of the company become more visible to the suppliers, who can collectively realize the "squeeze" if the company has failed to meet its needs. California consumers are well aware of such "squeezes" and if regulations effectively tie the strategic hands of the company, consumers will become aware of the squeezes in the future.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on June 17, 2005 at Pasadena, California.

Charles R. Plott

Exhibit A

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FORCED INFORMATION DISCLOSURE AND THE FALLACY OF TRANSPARENCY IN MARKETS

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Forced Information Disclosure and the Fallacy of Transparency in Markets*

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June 25, 2004

Abstract

The research addresses a widely held belief among regulators that any additional information about the objectives and intentions of one side of a market made available to other market participants will improve market performance. The belief is about the principles of market behavior in general in that the coordination of exchange will be better facilitated by any such information revelation and both sides will be better off. The experiment reported here is specifically motivated by regulatory hearings before the California Public Utility Commission on the California wholesale electricity market. Electricity suppliers argue that the California public would pay lower prices if the market demand by the major (public utility) buyers is known to sellers. The markets studied are in the form of decentralized, privately negotiated contracts, typical of the wholesale electricity markets. The experiment demonstrates that such markets generally converge to the competitive equilibrium. However, forced disclosure of demand works to the disadvantage of the disclosing side of the market. If the principles of market adjustment observed in the laboratory are also operating in the California wholesale electricity market, the proposed regulation forcing such disclosure would result in higher electricity prices for the consuming California public.

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Forced Information Disclosure and the Fallacy of Transparency in Markets

Timothy N. Cason and Charles R. Plott

"...ratepayers (i.e. California consumers) are aided when market participants have access to this level of [comprehensive utility planning data] information ...market participants (e.g. generators, energy service providers...) are able to more effectively plan to meet the demands of ratepayers...[to] develop the most efficient and cost-effective solution to meeting product demand." (page 8, Comments of the Independent Energy Producers Association Concerning Data Confidentiality, 2004)

"The C[alifornia] E[nergy] C[omission] does not believe that California ratepayers will be harmed by a more transparent system." (page 4) "...[it] believes all planning 'facts' ought to be publicly available." (page 7, California Energy Commission's Comments on Confidentiality of Planning and Procurement Information, 2004)

1. Introduction

The preceding quotes, taken at face value, suggest that some commentators believe that more information about the objectives of one side of a market made available to the other side of the market always improves the advantages of the market for all. One often sees the term *transparency* to describe a wholesome objective for regulated markets, referring to the disclosure of private information by market participants. The belief is about the fundamental principles of price discovery in markets; that the law of supply and demand operate neutrally and more efficiently if all information is public. This view is reflected, for example, in the "sunshine" provisions of regulatory rulemaking in many states, as well as advice for financial markets from the IMF (2001).

But is more information always better? Motivated by a dispute over information disclosure proposed for California's regulated utilities, this paper presents laboratory evidence that forcing only some parties to reveal private information when bargaining with others can result in inferior terms of trade for the revealing agents. In other words, forcing the utilities to

reveal confidential information regarding their energy demands to suppliers leads to higher negotiated prices and ultimately higher electricity prices for California consumers. The fallacy is that greater information in markets necessarily improves market performance from the point of view of all participants. While no detailed theory that leads to this view is offered, the fallacy itself appears to rest on a flawed interpretation of the law of supply and demand along the following lines: *Efficient market equilibration is identified with the Nash Equilibrium of an associated game theory model. For the game to equilibrate at an efficient Nash equilibrium compete information about player utility functions must be necessary. Therefore, markets will work better if the utility functions are known to all.* Of course, every sentence of the above argument can be challenged as incorrect.

Our experiment evaluates the market implications of greater information dissemination based on a static environment without endogenous entry or exit of suppliers. The quotes above for California, as well as the position of the European Federation of Energy Traders, indicate that commentators believe that one benefit of greater transparency arises through more efficient entry decisions.[1] Although the experiment does not address these long run considerations directly, it does provide some indirect evidence that entry could be attracted by greater information dissemination because the information leads to higher prices and profits of suppliers. But if this information release ultimately leads to lower costs to the buying utilities due to increased entry, utilities should not need additional regulations to force them to reveal their planning and procurement data.

Before presenting details of the experimental design, it is useful to first present some background of the motivating controversy in the California electricity market that serves to

[1] "Poor access to information raises a huge barrier to the entry of new market participants and is stifling the development of efficient, transparent wholesale markets" (page 1, EFET, 2003).

characterize the manner in which the fallacy finds its way into important regulatory discussions. Overall, about one-third of the energy requirements of California's investor-owned electric utilities are met by utility-owned generation. The remaining two-thirds are bought from independent power producers, other out-of-state utilities, and federal power projects such as the Bonneville Power Administration. While some of this power is bought on centralized spot markets, most is procured through short term (a year or less) and medium term (one to five years) contracts that are negotiated with these suppliers.

The relationship between California's electric utilities and third party intervenors such as The Utility Reform Network (TURN) and the Office of Ratepayer Advocates (ORA) has been strained over the years, particularly recently because of the well-publicized problems with energy pricing in the state. Starting in 2002 these intervenors, supported by market participants who sell power to California utilities, sought to require the utilities to publicly release substantial amounts of short- and long-term planning data to all market participants, including all product, price, forecast and availability information contained in the utilities' procurement-related activities and applications. The intervenors and suppliers argued that this increased the market's transparency and will operate to the benefit of the electricity consuming public. In the utilities' opinion, however, revealing such detailed data is tantamount to revealing all of their relevant demand information to potential suppliers prior to initiating negotiations.

Through a series of hearings, administrative law judge rulings and negotiated settlements between the utilities and the intervenors during 2002 and 2003, the utilities either agreed to or were ordered to provide some additional information that had previously been considered confidential. Some planning and forecast data, as well as short-term procurement plans, for example, are now released but with a lag of several years. Other "market sensitive" information was not to be released. Nevertheless, in an April 3, 2003 ruling, the judges and the Public

Utilities Commission expressed intent to revisit their approach governing the treatment of confidential information, to improve "transparency in resource planning." The utilities strongly oppose releasing more information to the suppliers, and the suppliers strongly support receiving additional information from the utilities.[2]

It is well recognized in economics, of course, that as long as interests of bargainers are not sufficiently integrative (i.e., are not largely aligned with common interests) then providing private information to a bargaining opponent can make the revealing party no better off. This is true of most economics problems such as bargaining over predominantly distributive attributes like price. For example, see Kennan and Wilson (1993) for an overview of bargaining models with private information. In regulatory disputes like this, however, theoretical arguments may not carry as much weight as clear, empirical evidence. To make a clear comparison between market outcomes with and without information disclosure using field data would require at least two different regulatory territories with different disclosure rules but similar market conditions (e.g., number of utilities, suppliers, power exchanges, procurement rules, weather conditions, etc.). But as any Californian will tell you, California is a unique place. Therefore, an accurate empirical evaluation of the information disclosure rules, holding other market conditions constant, is not feasible with field data. Empirical evidence, however, can be provided by a laboratory study.

Our laboratory experiment consists of 17 separate market sessions. We consider 5 separate environments, as explained in Section 3. All experiments are conducted in a new laboratory trading mechanism, described in Section 2, meant to capture many of the salient features of a market with multilateral, private pairwise negotiations, with no public transaction

[2] The California Energy Commission (2004) has weighed in on the side of the suppliers. Notably, the CEC also recommends that suppliers be allowed to keep their fuel prices confidential for 6 months, because such information provides a basis for a competitive edge among competing suppliers. That is, they argue that suppliers should be able to keep their costs private while utilities should be required to reveal more quantitative details about demand.

price information. This provides a reasonable approximation to the process of negotiating contracts for energy in California, where only the very short term (day ahead and hour ahead) needs are priced in centralized markets.

Section 4 presents the results. We find that negotiated prices tend to favor the information advantaged side of the market; e.g., prices were higher when buyers' demand information was revealed to sellers than when sellers' cost information was revealed to buyers. This advantage occurs both in the adjustment phase as prices are moving towards equilibrium, as well as after equilibrium is reached. Finally, we find that when sellers are informed about demand conditions and their own costs, prices are more sensitive to changes in demand conditions than changes in supply (cost) conditions.

To our knowledge, this is the first experimental paper that studies this type of information asymmetry in multilateral negotiations. Several previous studies, however, have introduced information asymmetries to bilateral negotiations. Murnighan et al. (1999) formed bargaining pairs and then privately provided information about both bargainers' payoff schedules to one member of the pair. The pairs negotiated over multiple dimensions, including some with distributive characteristics (like price) as well as others with integrative, cooperative characteristics. In face-to-face bargaining, the information provided to one member of the pair allowed that member to negotiate more favorable outcomes compared to a control treatment with symmetrically, partially informed bargainers. But asymmetrically informed bargainers were not able to negotiate more favorable settlements when negotiations were conducted through computer chat windows. Roth and Murnighan (1982) also compare symmetric and asymmetric information bargains struck over computerized chats, but over lottery "chips" for prizes of known and unknown value. They find that the asymmetrically informed member of the bargaining pair is able to earn more than his counterpart.

Srivastava et al. (2000) also asymmetrically inform one member of the bargaining pair, who like in our study negotiate only over price. Both bargainers know the item's cost, but only the buyer knows the value v she places on the item. The researchers do not employ a control treatment with symmetrically informed bargainers, and they employ alternating offer bargaining, control beliefs over the buyer's value v, and vary the degree of uncertainty over v as a main treatment variable. The authors employ this careful information structure because they evaluate specific predictions of the Grossman and Perry (1986) sequential equilibrium model of bargaining. Srivastava et al.'s results provide some reasonable support for key comparative static predictions, but they strongly reject the point predictions of the model.

2. The Trading Institution

Our goal was to capture some salient features of the multilateral but private, pairwise negotiations that characterize the price discovery process in the wholesale market for electricity in California. We chose this market structure for the experiment over classical open outcry markets for three reasons. First, the fallacy described above typically is found in regulatory discussions in industries in which the industrial organization is more decentralized, with localized, private contracts much the same as the California wholesale electricity industry. Second, it is well known from the study of insiders in open outcry markets that the information held by insiders quickly disseminates throughout the market and thus the effects of any asymmetries of information are typically small and hard to detect (Plott and Sunder, 1988, Forsythe and Lundholm, 1990). We wanted to study the effects in a context in which the principles at work can be more easily observed and studied. Third, in the California wholesale electricity markets contract terms following a successful negotiation are private information, so this market does not feature any public transaction price information. Participants can negotiate

simultaneously with different potential trading partners, and any agent is free to initiate or terminate negotiations with an agent on the other side of the market at any time. Clearly, therefore, the outside option for any negotiation is endogenous and is determined by trading terms available from alternative trading partners.

Most previous market experiments feature centralization of offers and/or transaction prices, so we required a new laboratory trading institution for these multilateral but private negotiations. A classic "telephone" market, such as the one used in Hong and Plott (1982) and in Grether and Plott (1984), could capture many of the key features of this type of negotiation process. The message space for telephone negotiations is rather rich, however, and can include intimidation, unverifiable claims and persuasion. Therefore, we employed a computer-mediated negotiation process to increase control and limit the message space to the main variable of interest: price offers.

Figure 1 displays the main trading screen for the *Marketscape* program used to capture the key features of private, multilateral negotiations. Buyer 125, for example, receives price offers from sellers in his "X125 Personal Market," and they are listed in ascending order in his personal sell order book shown at the lower right of the screen. He accepts the best offer by clicking on a checkbox and then clicking the ACCEPT button. This buyer can also send price offers to specific sellers by filling out the order form shown on the upper right of this screen. He can revise or add additional offers and cancel any outstanding offers at any time. However, he must select only one "market" to send any offer to, and only one seller (i.e., that seller's personal market) can view those particular offers. Therefore, individual negotiations between any pair of potential traders are private, but traders can negotiate simultaneously with multiple potential trading partners. There is no public reporting of transaction prices, but traders can always access their own personal trade history.

Although this particular form of computer-mediated negotiation is not found in the field, where many different forms of market exist, it is relevant for the policy question that is the focus of our research. We are interested in the impact of information asymmetry on market outcomes, and this trading process carefully controls the information exchanged through bargaining. The negotiation also permits a rich exchange of price information, without allowing more difficult-to-control factors such as bargaining personality and style to influence results. Of course, the free-form nature of this bargaining, unlike other structured mechanisms such as alternating offer bargaining, limits the applicability of most theoretical models of the bargaining process. But it more accurately represents the opportunities and constraints of the negotiation process for energy contracts.

3. Experimental Environment and Design

In any market, the major underlying behavioral motivations of buyers and sellers can be captured in "reduced form" in demand and supply curves. Thus, to the extent that buyer information is disclosed to sellers, this is similar to disclosing information about the buyers' demand curve. Of course, there are various amounts of buyer information that could be disclosed, but each piece will reveal something about the demand curve. There is a considerable range of data that the Public Utilities Commission is considering compelling utilities to reveal, but the scope of information disclosure being considered is tantamount to revealing all the information sufficient to define a buyer's demand curve. Therefore, the experimental design is based on this broad degree of information revelation. Although the Commission might ultimately choose a more limited degree of information revelation, the current experimental design should shed light on the direction of general effects that can be expected if more limited amounts of information are ultimately revealed.

As is the usual case in markets, each trader knew his or her own trading motivations—that is, sellers knew their own production costs and buyers knew their own valuations for any units they purchase. For the sessions labeled as "Sellers Informed," however, the sellers all received information (available at any time through a "Payoff Summary" link on their computer screen) about the minimum amounts that each buyer valued each unit that they might purchase. The fact that sellers were informed was common knowledge, but the content of this valuation information was only distributed to the sellers. Buyers only knew their own valuations and did not receive any information on seller costs or other buyers' values, as in the usual case. Asymmetric information was distributed analogously in sessions labeled as "Buyers Informed"; in these sessions, buyers all knew the maximum amount of each seller's cost for each unit potentially supplied, but sellers only knew their own costs.

For the analysis we divide the 17 experimental sessions into five designs, with two to five replications for each design, as summarized in Table 1.

1. Design A has induced supply and demand arrays shown in Figure 2, or a similar variation with slightly different numbers of buyers and sellers. The distinguishing feature of this design is that it has a narrow range of competitive equilibrium (CE) prices, or in some cases a unique CE price.
2. Design B has supply and demand arrays shown in Figure 3. The distinguishing feature of this design is that it has a much wider range of competitive equilibrium prices. All prices in the interval [475, 600] are equilibrium prices in which the quantity supplied equals the quantity demanded.
3. Design C features a variety of upward demand shifts in different periods, and one supply shift in an early period. The demand shifts are displayed in the supply and demand arrays shown in Figure 4.

4. Design D features a shift in both demand and supply in period 7, which widens the competitive equilibrium price interval in either the downward or upward direction. Figure 5 displays the downward shift employed in two sessions; the other two sessions of this design used a mirror image upward shift in the equilibrium interval.
5. Design E first shifts the supply function (in period 6) and then shifts the demand function (in period 10), as shown in Figure 6.

Both Designs A and B have substantial symmetries between the demand side and the supply side. We began with symmetric demand and supply conditions to control for any influences that demand and supply shapes might have on the convergence process and that might obscure the separate impact of information disclosure.[3] Thus, while these curves might not reflect the conditions of the California electricity market, they do allow us to study how the proposed information revelations will influence the functioning of the fundamental laws of supply and demand.

Design C serves two functions. First, the design is a robustness check on the overall patterns of results derived from the other designs. The design involves a series of demand and supply shifts rather than the single demand or supply shifts of the other design. It also incorporates information revelation about demands and supplies that are not coincident with parameter changes, so information shifts that might be contained in market activity alone is not confounded with the information provided through regulations to one side of the market or the other. Secondly, the design is especially relevant for exploring the issues of the California electricity market. In this design, the supply curves used in the experimental markets have important qualitative features that broadly correspond to the features found in electricity markets.

[3] One of the early discoveries made using laboratory markets was that prices tend to converge from above (below) the competitive equilibrium when equilibrium surplus is larger for buyers (sellers) (Smith and Williams, 1982).

Supply is "flat" over a broad range and then turns upward sharply as capacity limits are approached. Demand, on the other hand, is very inelastic and grows from one period to the next. These are important similarities with the situation that can be expected to evolve in California as demand for electricity grows due to growing population, short-run supply is inelastic, and the elasticity of long-run supply is highly uncertain due the financial stress in the generation development market. Thus, the design tests for the possibility that the particular parameters present in the regulatory dispute that partially motivates the study do not have implications for the principles that are at work.

Designs D and E, like Designs A and B, are not intended to be consistent with specific underlying properties of the California electricity market. Instead, we chose these parameters to further investigate how the information advantage enjoyed by one side of the market affects adjustment to new equilibrium conditions. The designs also provide insight into how information is disseminated through bargaining in this multilateral negotiation institution.

The other variable that we systematically changed from one experimental session to another was whether the supply side or the demand side of the market was asymmetrically blessed with knowledge about the other side. In 13 of the 17 sessions, the sellers were given detailed information about the minimum value that units were worth to buyers. For shorthand we refer to these as "Sellers-Informed" sessions. In the two Design C sessions, the sellers received this information in period 5, and it was not updated until period 9. In the other sessions, the sellers received this information before the first period and they were continually kept up to date about changing information about the buyers.

While it is not the current issue in California, for an understanding of the symmetry in the other 4 sessions the buyers were given detailed information about the maximum cost that sellers

incurred to produce units. We refer to these as "Buyers-Informed" sessions, which can be used as controls to identify the effect of information disclosures.

As highlighted in Table 1, about one-half of the sessions were conducted at Caltech and one half at Purdue University. All sessions used the identical Marketscape trading program, running on a server located in the Caltech lab. All subjects underwent substantial Marketscape training prior to participating in these sessions, which included "practice" negotiation and trading with robot trading partners. The specific instructions for the sessions reported here, shown in Appendix A, were distributed to subjects and read orally by the experimenter while displayed on an overhead projector. Period 1 of each session (not reported) was a practice period that did count in the subjects' final cash earnings. The exchange rate of experimental currency to dollars varied across design parameters, calibrated to provide average earnings than ranged from about $25 to $40 for the sessions that lasted between 2 and 2.5 hours.

4. Results

Our first result confirms that the general market convergence properties observed in previous auction-type and exchange-type experimental markets also operates in these bilateral-negotiation markets.[4]

Result 1:

Prices in the bilateral negotiation markets converge to a competitive equilibrium under stable supply-demand condition: (i) average prices approach the competitive equilibrium level and (ii) the variance of prices across contracts declines over time.

[4] All of the results exclude the small number of transactions that were clearly typographical errors because they differed from other transaction prices by at least one order of magnitude; for example, a price of 57 when all recent transaction prices ranged between 575 and 600. This excludes 48 of the 3351 transactions in the 17 sessions (1.4 percent).

Support: Despite the decentralized nature of trading and price information, prices move towards and usually reach the competitive equilibrium price range in the sessions reported here. Figure 7 presents all the transaction prices in session 040207 to illustrate this price convergence. Early prices are volatile and many are significantly lower than the equilibrium price range, but eventually most prices are within the equilibrium range. Table 2 summarizes the deviations of the median prices from the competitive equilibrium for all sessions that began with at least 5 periods of stable supply and demand conditions (that is, all designs except Design C). The first column displays the deviations of the median transaction price in the first paying period (period 2), and the middle column displays the deviations in period 5. All median prices lie within the wide equilibrium price interval in Design B, but period 2 median prices frequently deviate from the equilibrium in the other designs. The median absolute deviations decline significantly from period 2 to period 5, based on the 15 statistically independent pairwise differences shown in the right column (nonparametric Wilcoxon signed rank test p-value=0.031, one-tailed).

Price movements toward the competitive equilibrium interval are clearly evident in Table 2. However, by "convergence" in these types of markets, we mean more than simply a tendency for average or median prices to approach the equilibrium level. In addition to average prices that approach equilibrium, convergence also requires price dispersion to decline toward zero. That is, we expect the "law of one price" to prevail in markets that have converged. Figure 8 presents evidence on this dimension of convergence. For each period and for each session (except those in Design C) the figure displays the standard errors of the mean associated with the average transaction prices up until the first shift in supply and demand. In most sessions the price dispersion, as shown on the vertical axis, is high during the early periods. As the periods progress the dispersion falls dramatically in the sense that early dispersion is on the order of two to five times that of later periods. In other words, competitive pressures are bringing the prices

together, even though price information is never publicly displayed and traders can only infer prices through their bilateral negotiations with other traders.[5]

The next result presents the most important conclusion from the experiment: the relationship between pricing outcomes and the asymmetric distribution of information.

Result 2:

Information confers a pricing advantage, particularly during the equilibration phase of market interactions when prices are adjusting toward equilibrium.

Support: Consider Figures 9 and 10, which show the median transaction prices for each period and each session in Designs A and B. The Buyers-Informed sessions are identified with the triangle and the cross in both figures. In Design A (Figure 9), for all periods except one the maximum median price in any Buyers-Informed session is lower than the minimum median price in any Sellers-Informed session. Pooling the data in Design A across sessions and periods, we find that prices are on average 7 percent higher when sellers are informed (484) than when buyers are informed (453). Likewise, in Design B (Figure 10) median transaction prices are also usually higher in the Sellers-Informed sessions than in the Buyers-Informed sessions. Pooling across sessions and periods in Design B, prices are on average 8 percent higher when sellers are informed (555) than when buyers are informed (516).

Prior to the mid-session shift, Design D has the same supply and demand configuration as Design A. This design therefore provides 4 additional sessions (all with sellers informed) to add to the 9 Design A and B sessions shown in Figures 9 and 10 for a statistical comparison of prices in the two information treatments. For this comparison we use the period 5 (median price – competitive equilibrium price midpoint) deviations for each session in designs A, B and D to

[5] Another criteria of convergence often used when analyzing laboratory markets is increasing trading efficiency. Our markets were highly efficient, but relative efficiency differed across designs due to differences in underlying value and cost conditions (i.e., displayed in Figures 2 through 6). Our experimental design does not include sessions without information disclosure, so it cannot determine whether forced disclosure increases or decreases efficiency.

provide comparable pre-shift prices in all sessions. These deviations are positive in only one of the four buyers informed sessions, but are positive in five of the nine sellers informed sessions. A nonparametric Mann-Whitney test, based on the 13 statistically independent session observations, marginally rejects the hypothesis that these period 5 deviations are not different in the two treatments in favor of the one-sided alternative that prices are higher when sellers are informed about buyer values (p-value=0.087, N_A=9, N_B=4). We draw a similar conclusion from a simple cross-sectional OLS regression that employs one period 5 price deviation observation per session, which allows us to control for design differences with a Design B dummy variable. The point estimate indicates a 21 franc higher median price when sellers are informed (standard error 12.7, one-tailed p-value=0.065).

Result 3:

The pricing advantage provided by the asymmetric disclosure of information often declines as prices approach the equilibrium, but the pricing advantage can persist when a wide range of equilibrium prices exists.

Support: Figures 9 and 10 indicate that the price differences between Buyers-Informed and Sellers-Informed sessions are generally more pronounced in the early periods than in the later periods. For example, consider the size of the percentage price difference across these two opposite cases for the first 3 paying periods (periods 2 through 4) compared to the next 3 paying periods (periods 5 through 7). In Design A (i.e., narrow range of equilibrium prices), the differences in prices across treatments are modestly greater in periods 2 through 4 (averaging 8.1 percent) compared to periods 5 through 7 (averaging 6.7 percent). But in Design B (i.e., wider range of equilibrium prices), in periods 2 through 4 the prices are on average 10.1 percent higher when sellers are informed (544) than when buyers are informed (494), while in periods 5 through

7 the prices on average are only 5.3 percent higher when sellers are informed (558) than when buyers are informed (530).

Nevertheless, an independent examination of the longer Design B sessions 040215a and 040215c indicate that the pricing advantage can persist even after prices have converged to equilibrium, as long as that equilibrium contains a relatively wide range of prices. In the late periods 8 through 10, the average transaction price in the Sellers-Informed session 040215c is 9 percent higher (581) than in the Buyers-Informed session 040215a (532). Note that both of these averages are, however, still within the range of equilibrium prices [475, 600].

Result 4:

The response of realized transaction prices to changes in equilibrium market conditions depends on the information available to traders about the new supply and demand situation. (i) Design D sessions show that when both types of traders can recognize an underlying shift, prices adjust toward the midpoint of the new equilibrium price range; (ii) Design E sessions show that prices do not adjust to reflect cost reductions when only sellers are aware of the underlying change in market conditions.

Support: Figures 11 and 12 present median transaction prices for the 6 sessions in Designs D and E. Sellers were informed of the minimum buyer values in all 6 of these sessions. In Design D a narrow market equilibrium price range in early periods is followed by a large demand and supply shift in period 7 to a condition that results in both inelastic demand and inelastic supply and a wide range of equilibrium prices. After the shift, however, prices that were very near the old equilibrium price remain as possible new equilibrium prices. Thus, since we observe prices in the equilibrium range—as documented throughout these results—a possibility exists that prices would move very little or by a substantial amount (up to 50 percent) after the shift is introduced in period 7.

Despite the possibility that prices need not adjust by much in order to reach a new equilibrium level, however, prices in fact adjust quickly and significantly to near the middle of the new equilibrium price range. What is perhaps more surprising is that the shift is similar in speed and size when the equilibrium shifts down compared to when it shifts up, even though in all four sessions sellers know the buyers' values while buyers never know the sellers' costs. Buyers can infer that market conditions are changing in period 7, though, because of their own dramatically revised resale values. This may have motivated them to negotiate aggressively with sellers following the shift, leading to substantial downward price pressure when the equilibrium price range shifted all the way down to 280 francs. This conjecture motivated the more subtle supply and demand shifts introduced in Design E.

In Design E, sellers' costs shifted down in period 6 resulting in a downward widening of the competitive equilibrium price interval. Buyers' values remained unchanged and they received no information about sellers' costs, so they should have been unaware of the supply shift. Although prices could have fallen by as much as 20 percent following this shift and still remain in the equilibrium range, Figure 12 shows that median prices hardly adjust (remaining mostly around 700 francs) in both sessions. By contrast, median prices increase immediately in both sessions when a demand shift that is known to the informed sellers is introduced in period 10, and prices continue to rise thereafter. This suggests that when sellers are asymmetrically informed about buyer values the transaction prices are more sensitive to demand shifts than they are to supply shifts.

Result 5:

All results stated above survive the robustness tests of Series C.

Support: Series C consists of two sessions operating under the same parameters. The time series of median transaction prices are displayed in Figure 13. In these sessions, the first two

periods have stationary, symmetric demand and supply with consumer surplus equal to producer surplus. Prices converge to near the competitive equilibrium by period 2, consistent with Result 1. In period 3, a demand and supply shift takes place that is not announced to any traders. As can be seen prices move up, possibly reflecting the asymmetric rents, with consumer surplus greater than producer surplus and the market in the early part of adjustment feeling the changes with a consequent shift upward in price. In period 4, another upward demand shift takes place that exacerbates this rent asymmetry but does not affect the equilibrium price range. The information of the shift is not given to the sellers and there is no tendency for prices to move upward, consistent with Result 2 that the information disclosure is a key feature that conveys advantages to the information receiving side. In Period 5, another upward shift in demand takes place, this time widening the equilibrium price range. At the beginning of the period the demand is disclosed to the sellers, and consistent with Result 2 the prices immediately jump in one market and move sharply upward in the other market two periods later. In period 8, another upward demand shift takes place without demand disclosure. This shift in demand has no effect on market prices in session 040216a and a small effect in session 040216b, but since the 040216b market had an upward drift in prices anyway attribution to the demand shift is problematic. In period 9, when the demand is disclosed and sellers learn of the shift the market prices immediately respond upward in session 040216a, and median prices respond upward with a one period lag in session 040216b. The phenomena identified in all of the previous results are also found in this more complex setting thereby demonstrating that the results are robust to such environmental changes.

5. Conclusion

This research was motivated by a proposition about a basic principle that governs market behavior that is widely asserted in regulatory settings. The proposition is that disclosure of plans and market strategies by one side of a market to the other side will be helpful to market performance and beneficial to all of the market participants. The proposition reflects a belief about how the laws of supply and demand work and the manner in which information works to facilitate their operation. The results of the experiments demonstrate that such a proposition is not correct. In the context of market transactions such disclosures damage the disclosing party. The laws of supply and demand follow a completely different set of principles from those on which the proposition rests.

In the case of the California wholesale electricity market, the proposition holds that electricity prices will be lower to the consuming public if the major electricity demanders would make their demand function known to suppliers prior to contracting. The experiments demonstrate that the presumption should be that opposite would be the case. Disclosure of the demand information would result in a tendency for prices to increase, especially in the cases in which demand and supply are both inelastic and in which demand is changing, as is expected to be the case in California in the future.

Is it the case that the California wholesale electricity market is special in the sense that the law of supply and demand would work completely differently than the way that it is observed at work in the laboratory? Currently, neither general theory nor institutional fact has been advanced to suggest anything other than a presumption that the basic principles operate in California in the same way that they are assumed to work in general. Indeed advocates of the forcing of information revelation have produced no theory at all and instead have advanced the proposition as if it is completely general, applicable to all markets. Thus, the experiments

produced here place a burden on the advocates to produce a theory of sufficient generality to support the proposition that they advance. When that is done additional tests can be performed to test its reliability.

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Figure 1: Example *Marketscape* Trading Screen

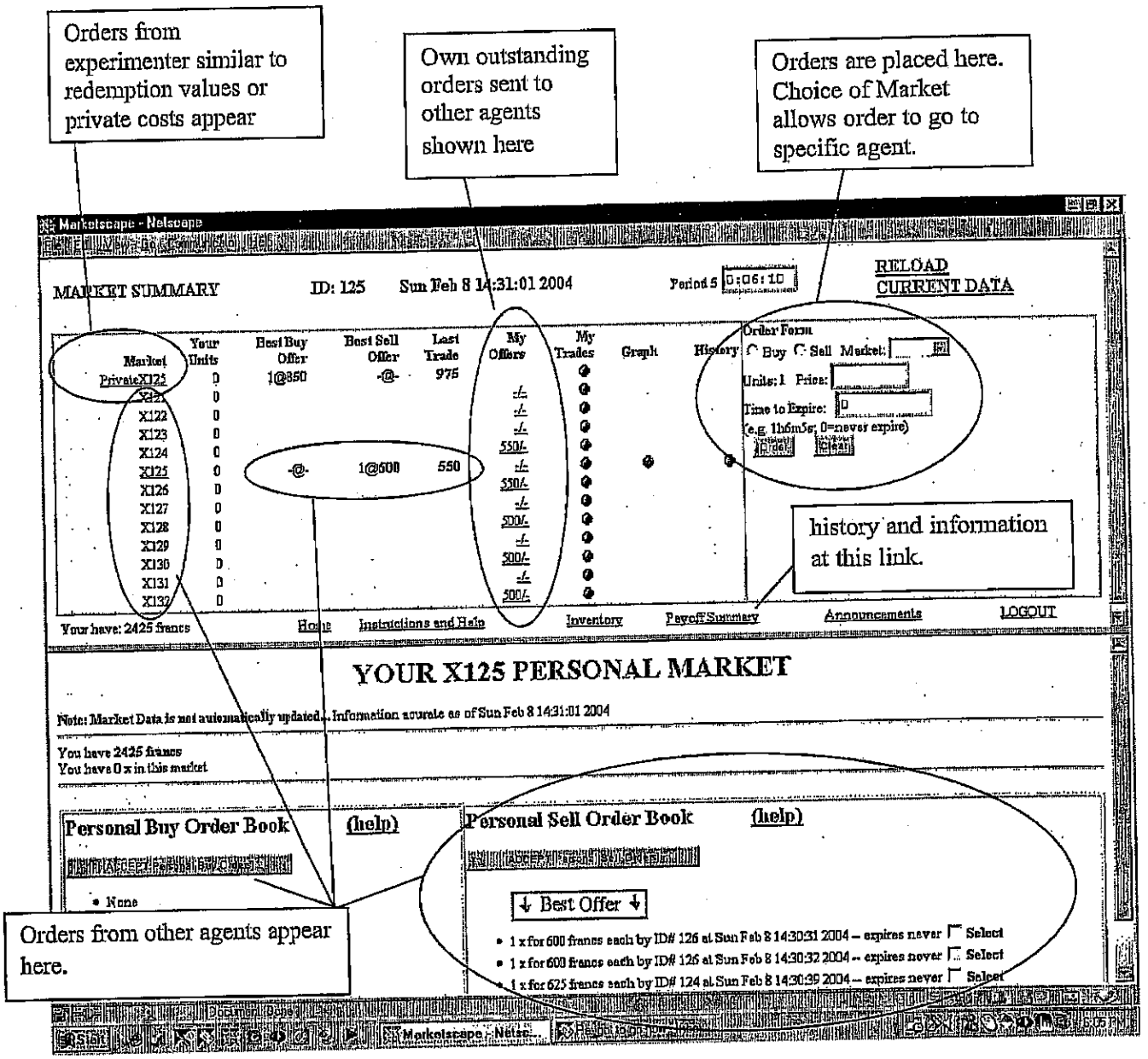


Figure 2: Supply and Demand for Design A

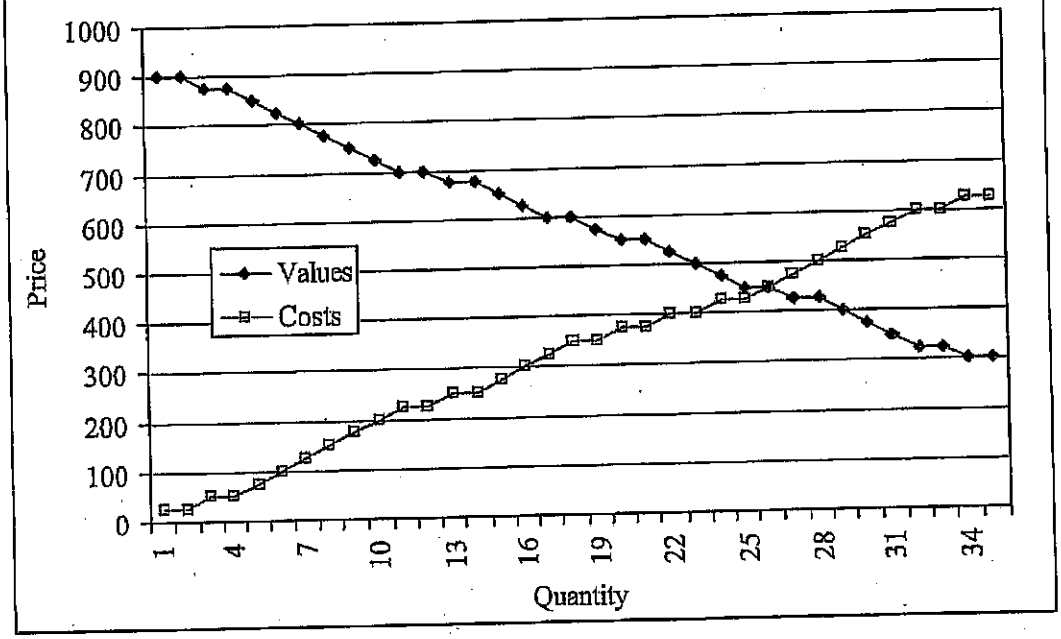


Figure 3: Supply and Demand for Design B

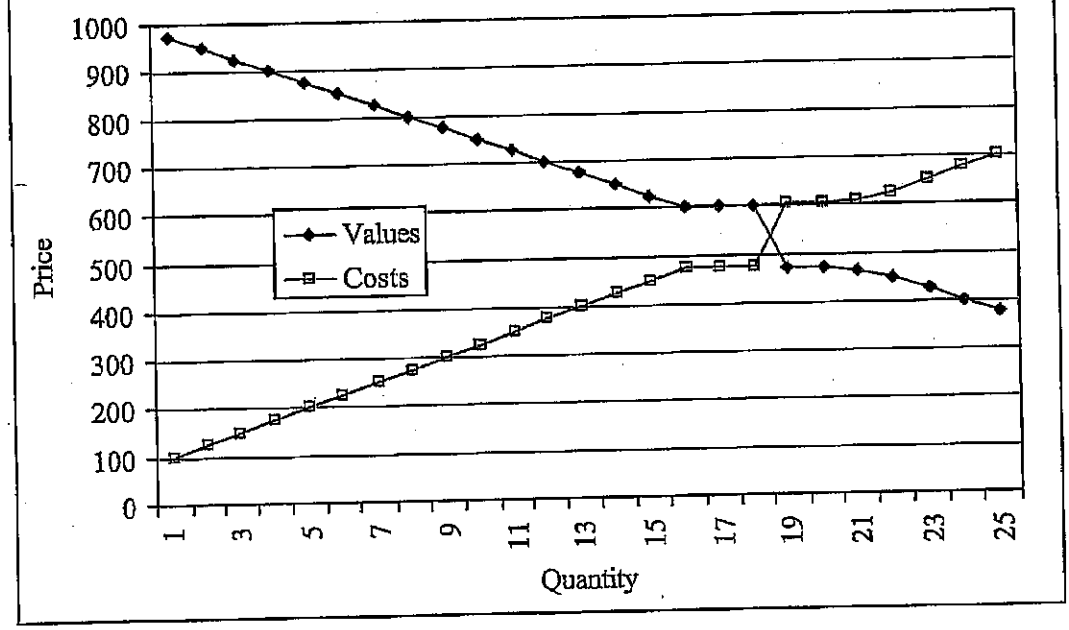


Figure 4: Supply and Demand for Design C

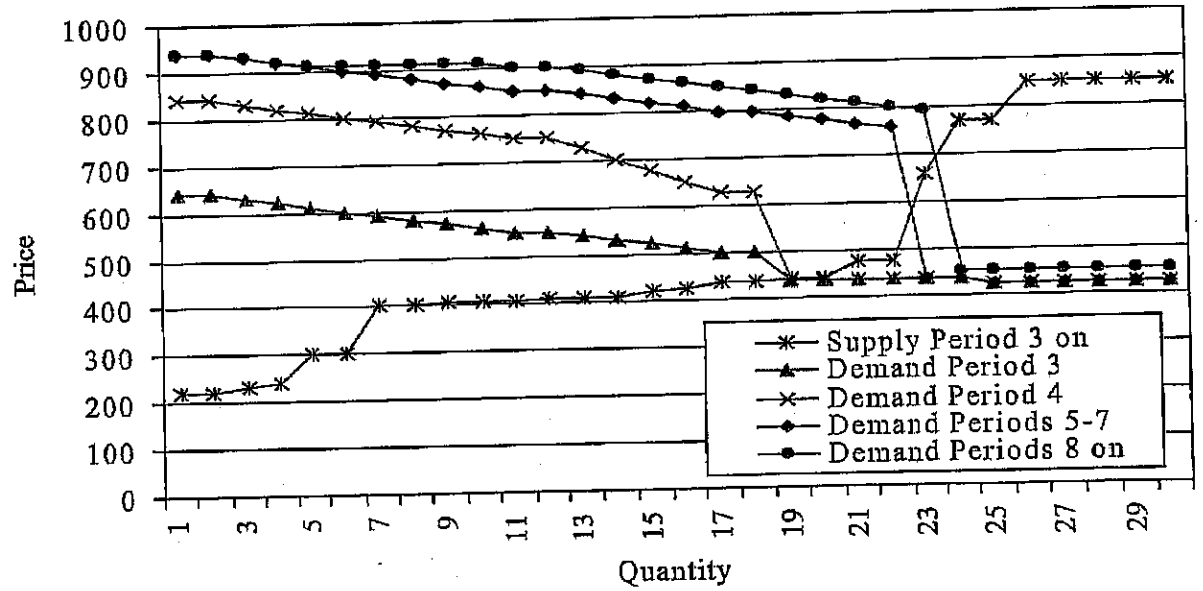


Figure 5: Supply and Demand for Design D

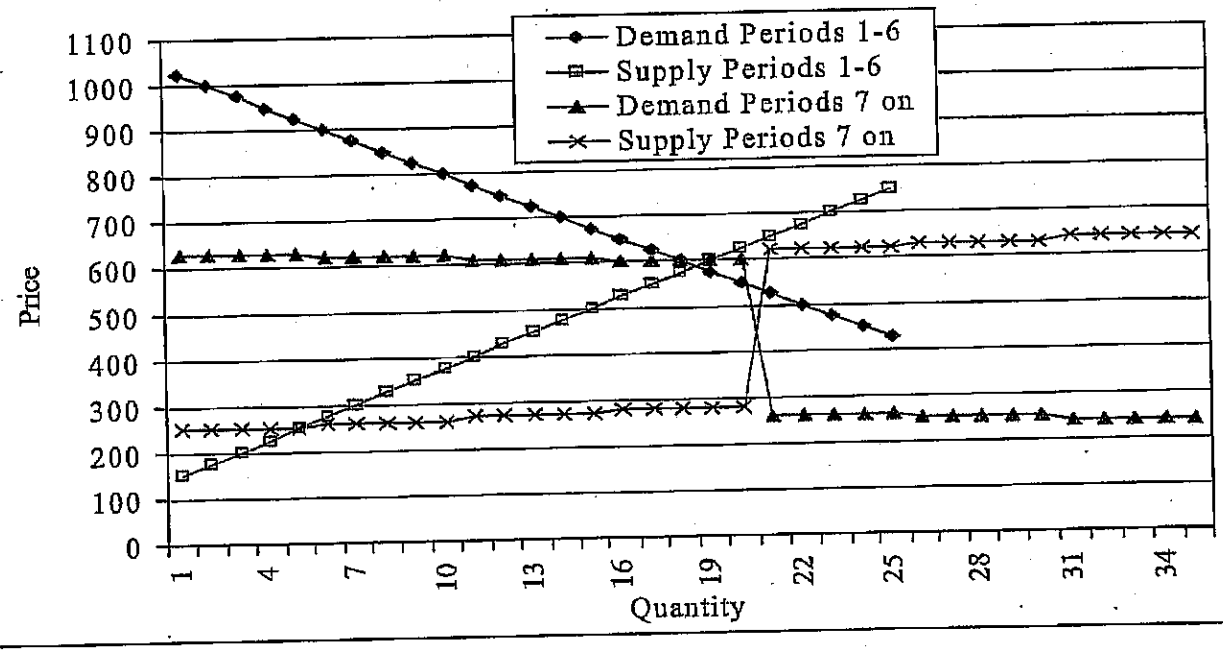


Figure 6: Supply and Demand for Design E

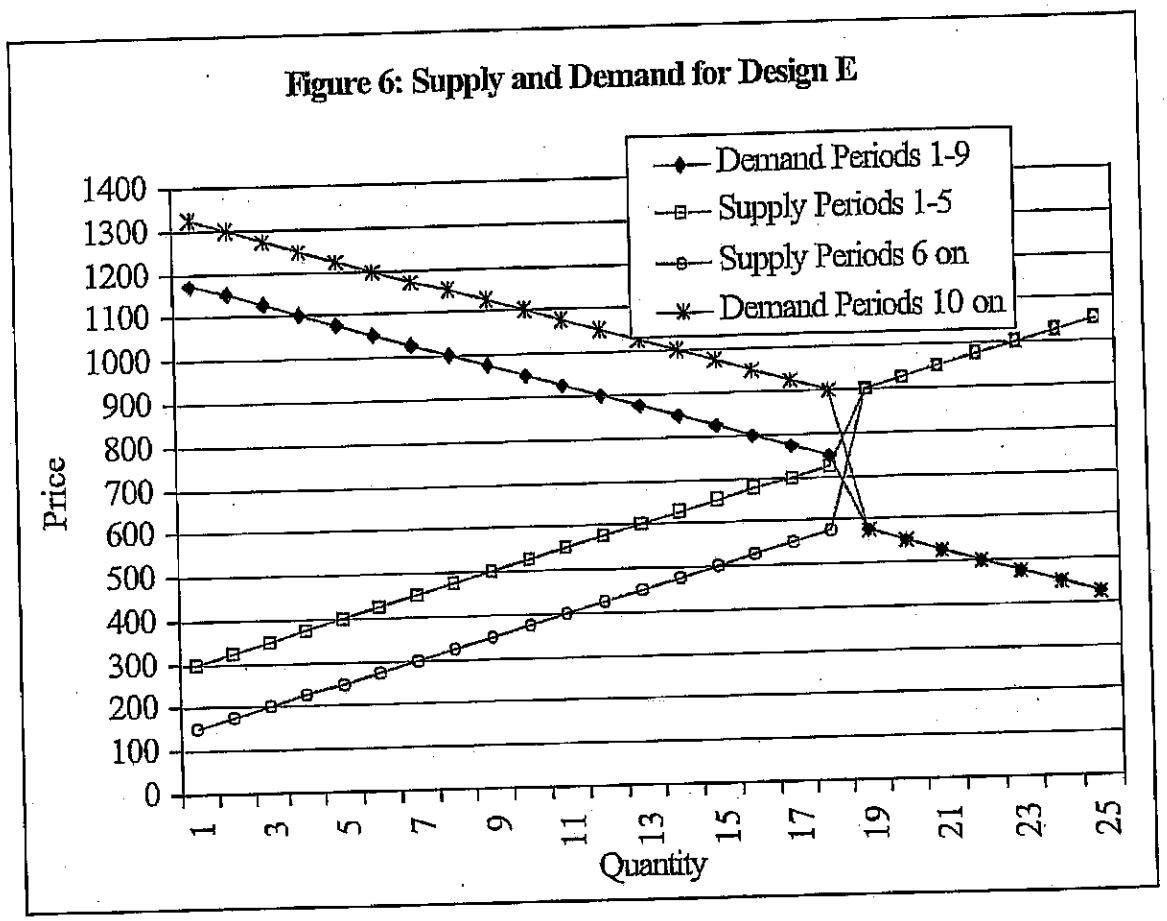


Figure 7: All Transaction Prices in Session 040207

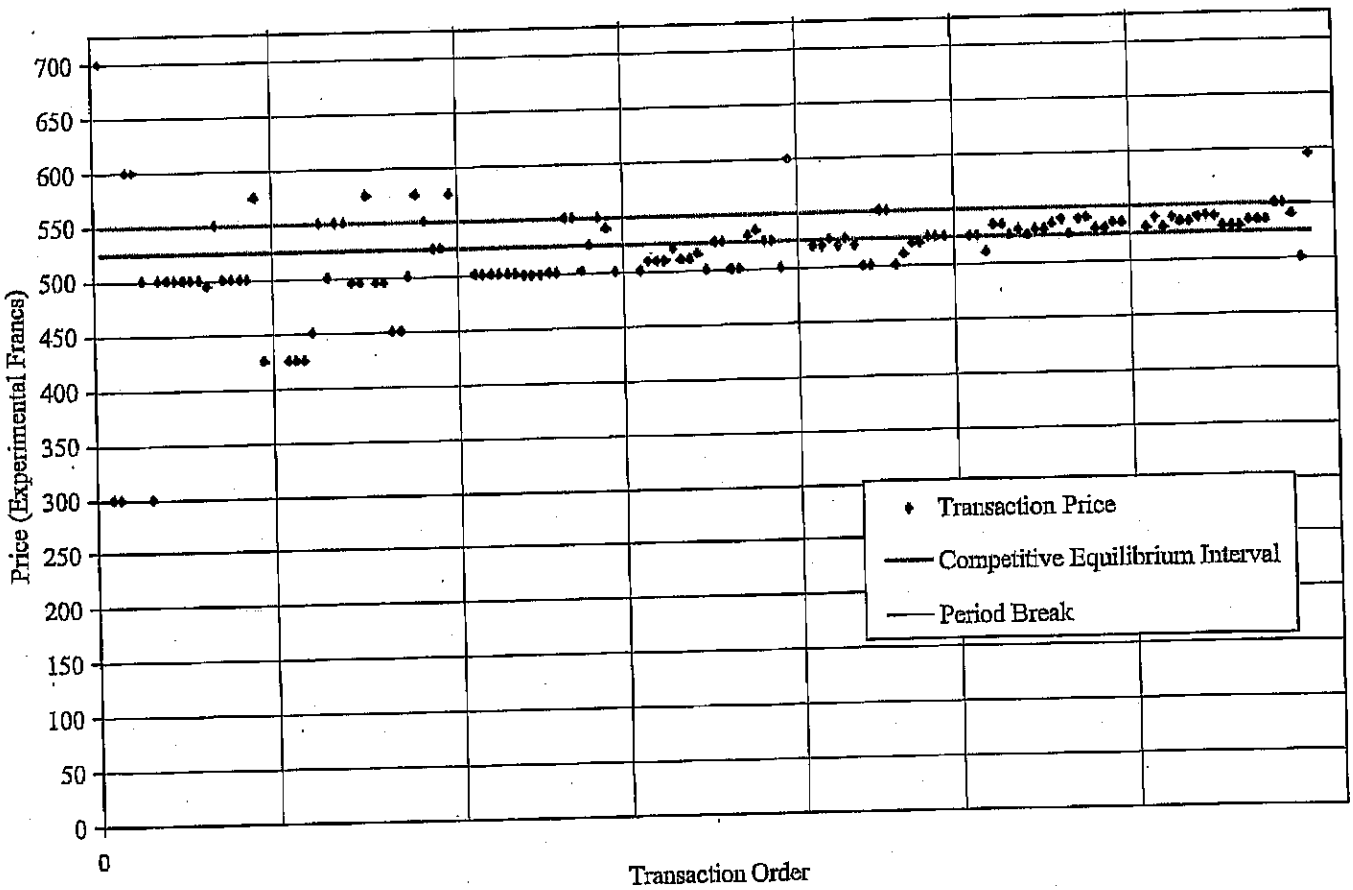


Figure 8: Price Dispersion, by Session (Standard Error of the Mean Transaction Price)

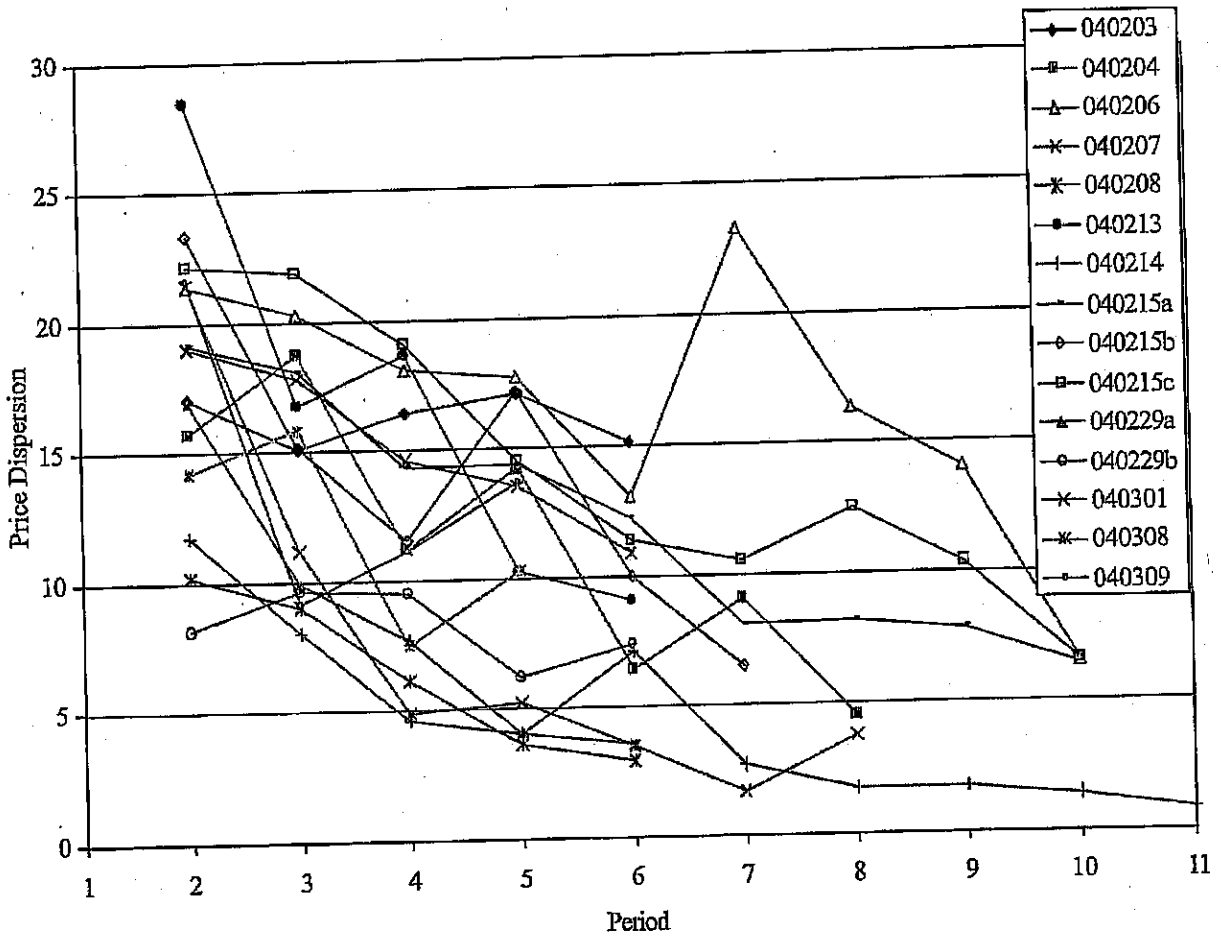
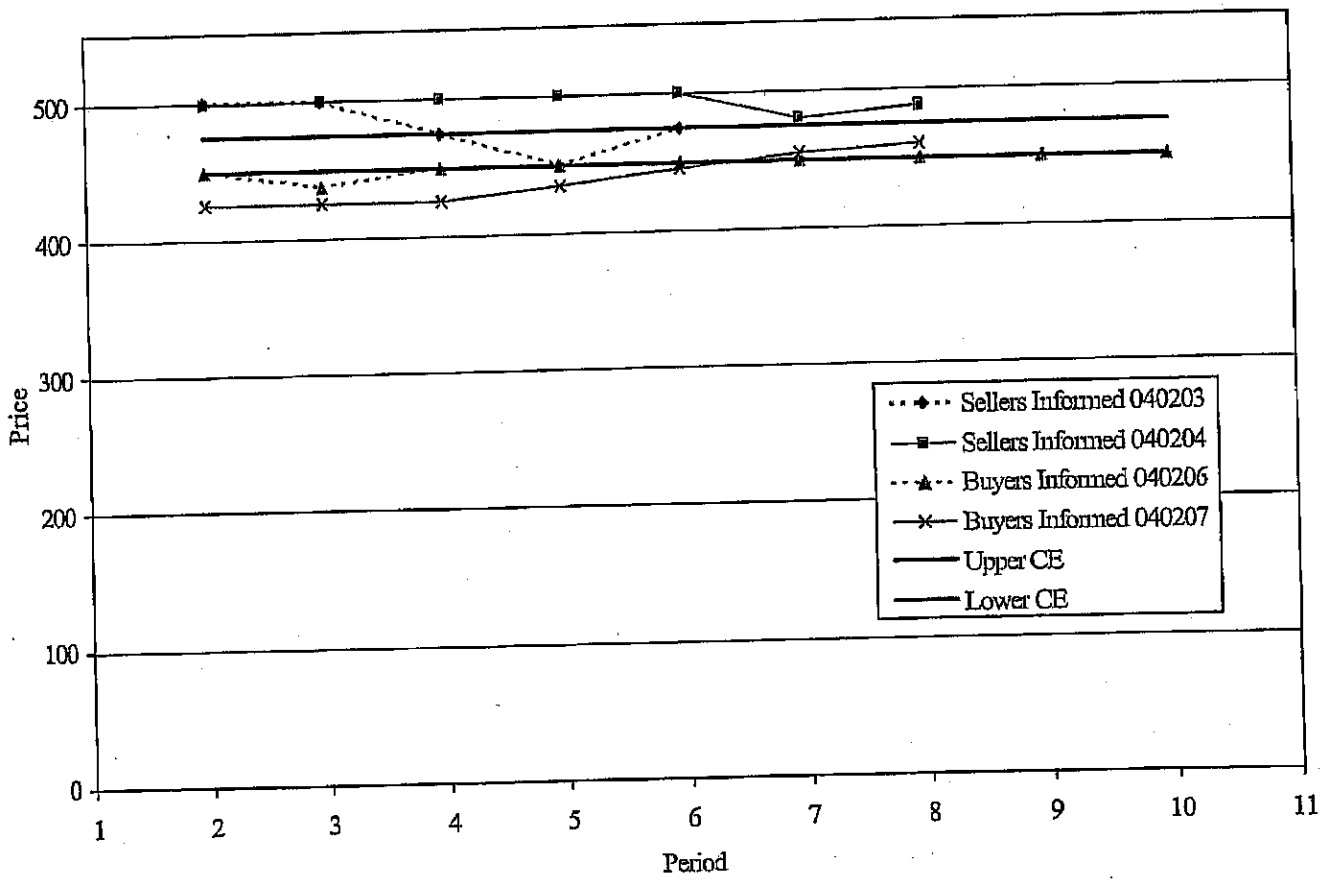


Figure 9: Median Transaction Prices by Session, Design A



Note: Upper CE of 475 only applies to session 040207. Other sessions have a unique CE of 450.

Figure 10: Median Transaction Prices by Session, Design B

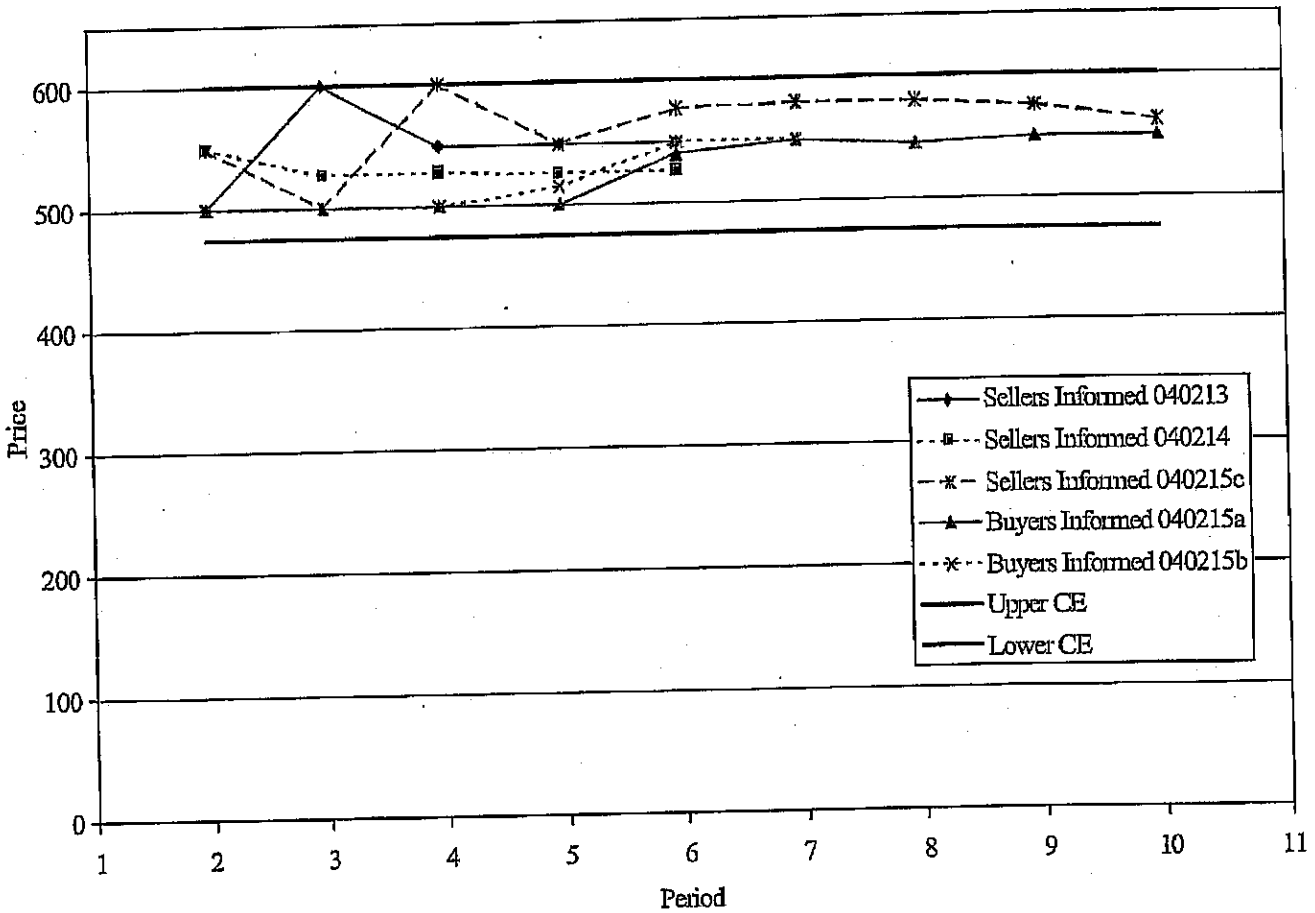


Figure 11: Median Transaction Prices by Session, Design D

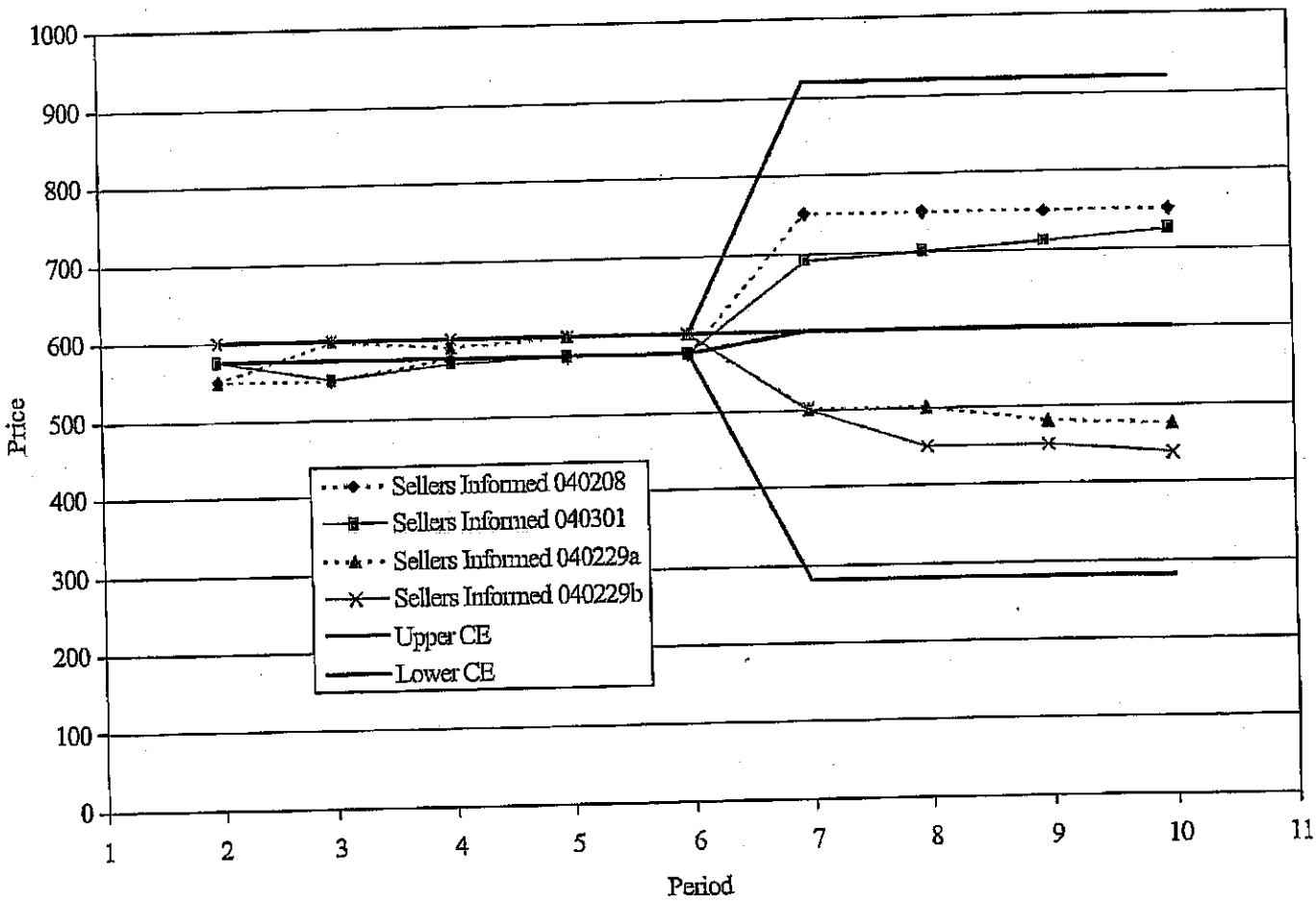


Figure 12: Median Transaction Prices by Session, Design E

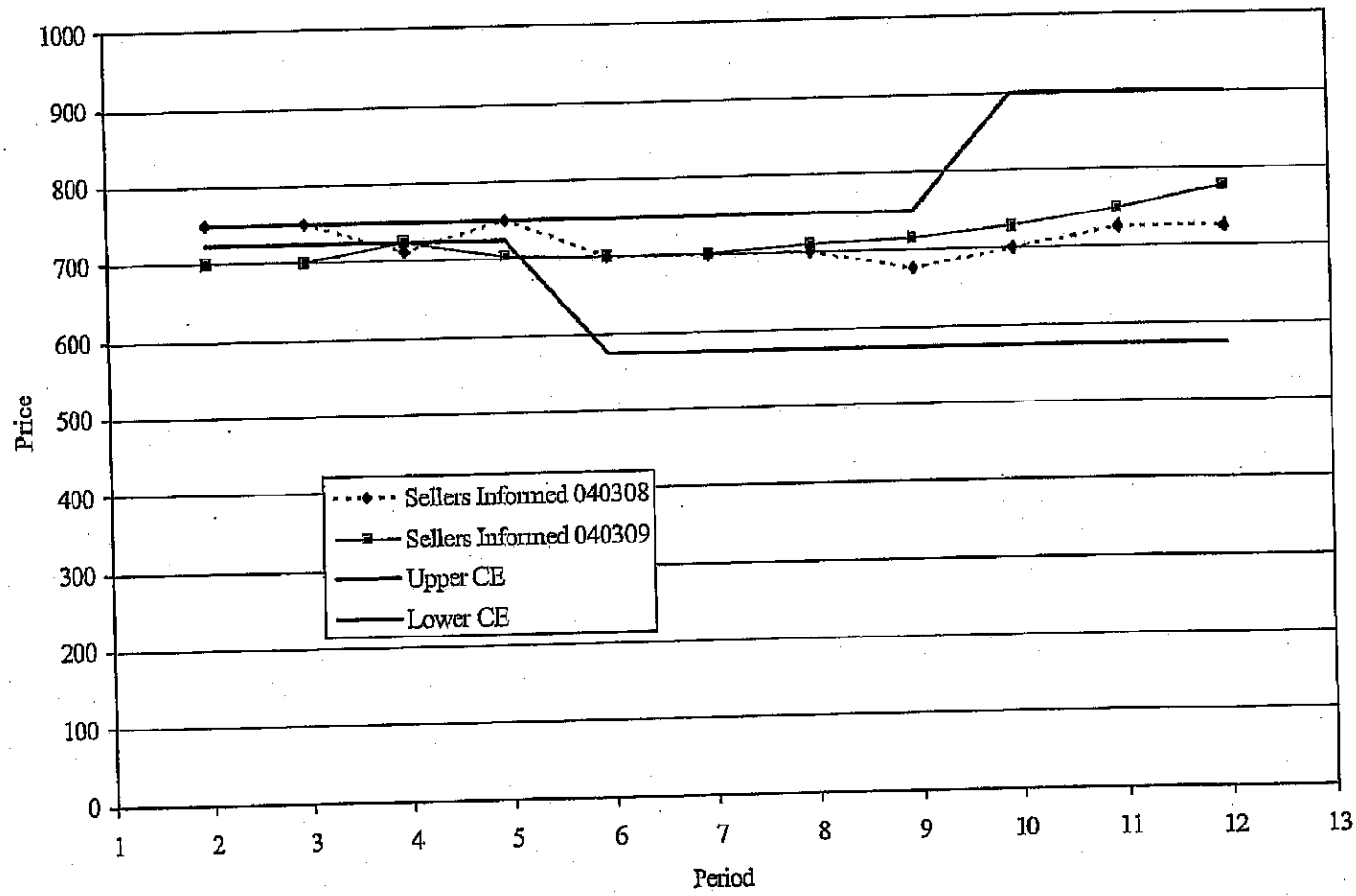


Figure 13: Median Transaction Prices by Session, Design C

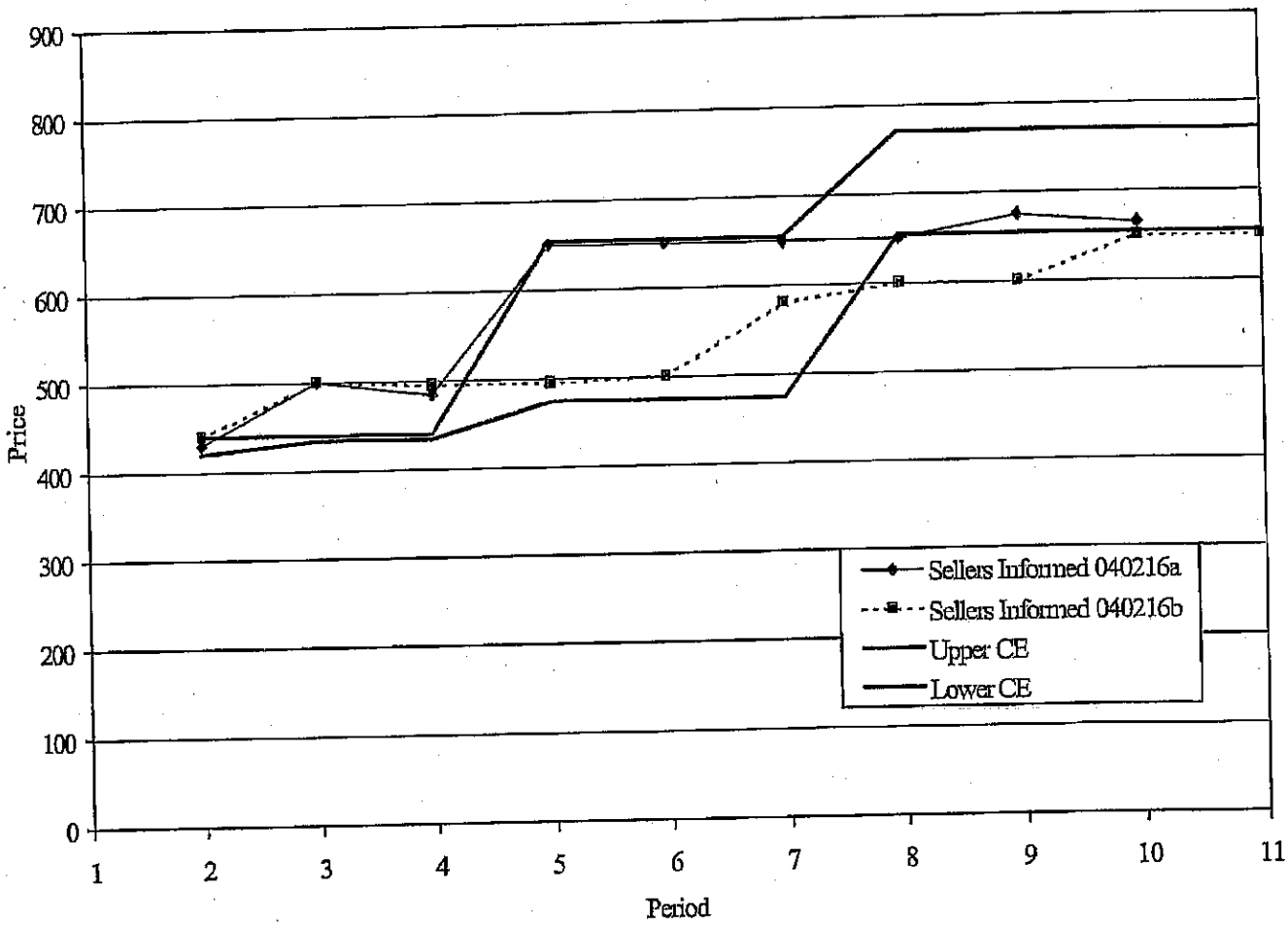


Table 1: Experimental Sessions

Index	Location	Market Parameters	Disclosure Condition
040203	CIT	Design A	buyer values known to sellers
040204	CIT	Design A	buyer values known to sellers
040206	CIT	Design A	seller cost known to buyers
040207	CIT	Design A	seller cost known to buyers
040208	CIT	Design D, upward shift in equilibrium in period 7	buyer values known to sellers
040213	Purdue	Design B Set 2	buyer values known to sellers
040214	CIT	Design B Set 3	buyer values known to sellers
040215a	Purdue	Design B	seller cost known to buyers
040215b	CIT	Design B	seller cost known to buyers
040215c	Purdue	Design B	buyer values known to sellers
040216a	CIT	Design C set 4b Schedule 3 demand shifts 3,4,5,8	buyer values known to sellers periods 5, 9
040216b	Purdue	Design C set 4b Schedule 3 demand shifts 3,4,5,8	buyer values known to sellers periods 5, 9
040229a	Purdue	Design D, downward shift in equilibrium in period 7	buyer values known to sellers
040229b	CIT	Design D, downward shift in equilibrium in period 7	buyer values known to sellers
040301	Purdue	Design D, upward shift in equilibrium in period 7	buyer values known to sellers
040308	Purdue	Design E, supply shift per. 6, demand shift per. 10	buyer values known to sellers
040309	Purdue	Design E, supply shift per. 6, demand shift per. 10	buyer values known to sellers

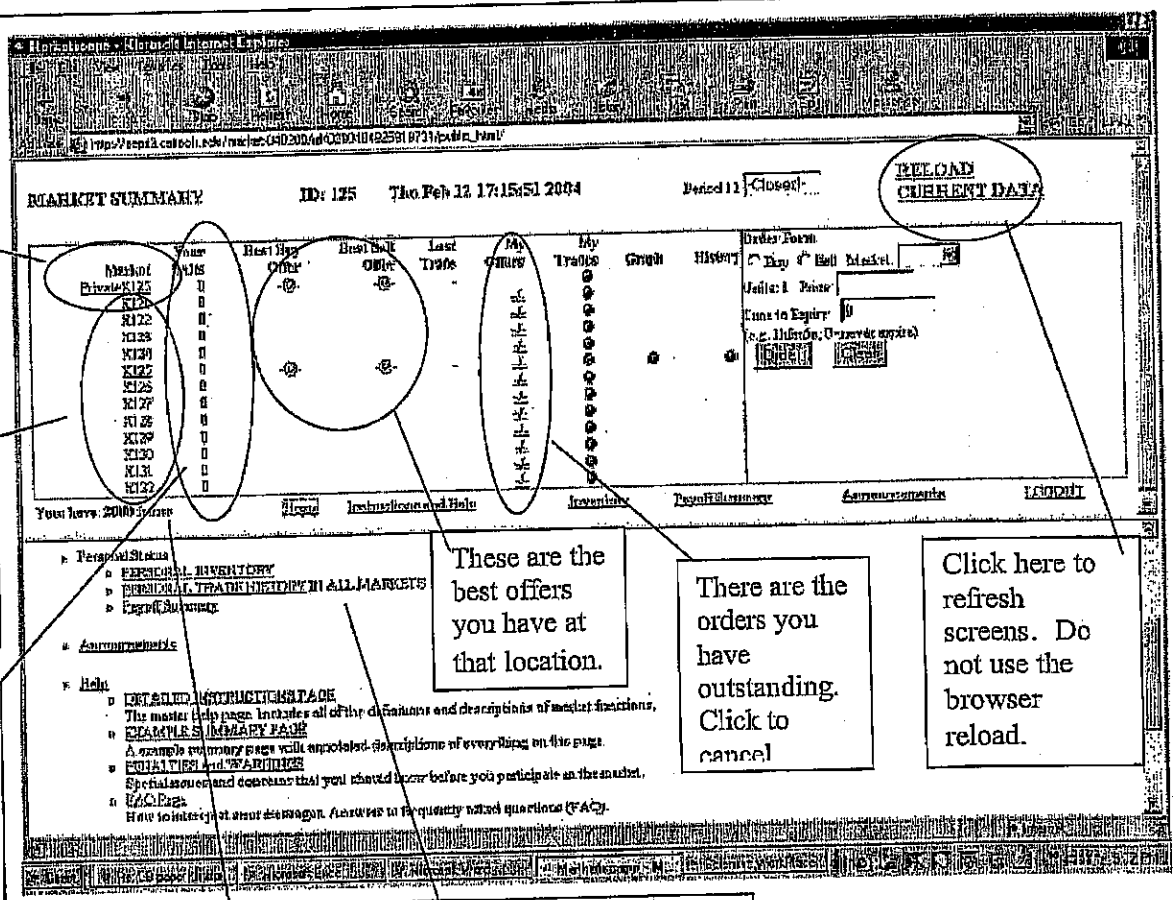
Table 2: Deviations of Median Transaction Prices from Competitive Equilibrium

Session Index	Period 2 Median-CE	Period 5 Median-CE	Difference in Absolute Deviations (Period 2 - Period 5)
Design A			
040203	50	0	50
040204	49	50	-1
040206	0	0	0
040207	-25	-15	10
Design B			
040213	0	0	0
040214	0	0	0
040215c	0	0	0
040215a	0	0	0
040215b	0	0	0
Design D			
040208	-25	0	25
040301	0	0	0
040229a	-25	0	25
040229b	0	0	0
Design E			
040308	0	0	0
040309	-25	-22.5	2.5

Appendix A: Experiment Instructions for Specific Multilateral Negotiation Rules in *Marketscape*

The word buyer or seller reflects how you are seen by others. Odd numbers are buyers and even numbers are sellers. Buyers buy units from others (thus are viewed as a buyer by others) and then sell to the experimenter for profit. Sellers sell units to others (thus are viewed as a seller by others) after they have bought them from the experimenter. There are two types of markets. In your **private market**, you accept deals offered by the experimenter. Buyers will sell to the experimenter the units they bought from others and sellers will buy from the experimenter the units that they plan to sell to others.

In your **personal market**, you will receive offers from others just as you will place offers in their personal markets.



Private market is here for 125. Experimenter will place orders here that 125 can accept or reject.

Personal markets are here. Yours is in blue. Offers that others send to you will appear here. Just click on it to see them.

Your inventory is here. It appears in all markets because the program needs inventory in a market before it will let you sell to that person.

These are the best offers you have at that location.

There are the orders you have outstanding. Click to cancel

Click here to refresh screens. Do not use the browser reload.

Your cash on hand

Your history of all trades will be shown here.

- Watch the time.
- If you are a buyer, you will be placing orders in the EVEN personal markets (the odd are other buyers and like you are buying from the experimenter in a private market).
- If you are a seller, you will be placing orders in the ODD personal markets (the evens are other sellers and like you will be buying units from the experimenter in a private market).
- All offers are for 1 unit.

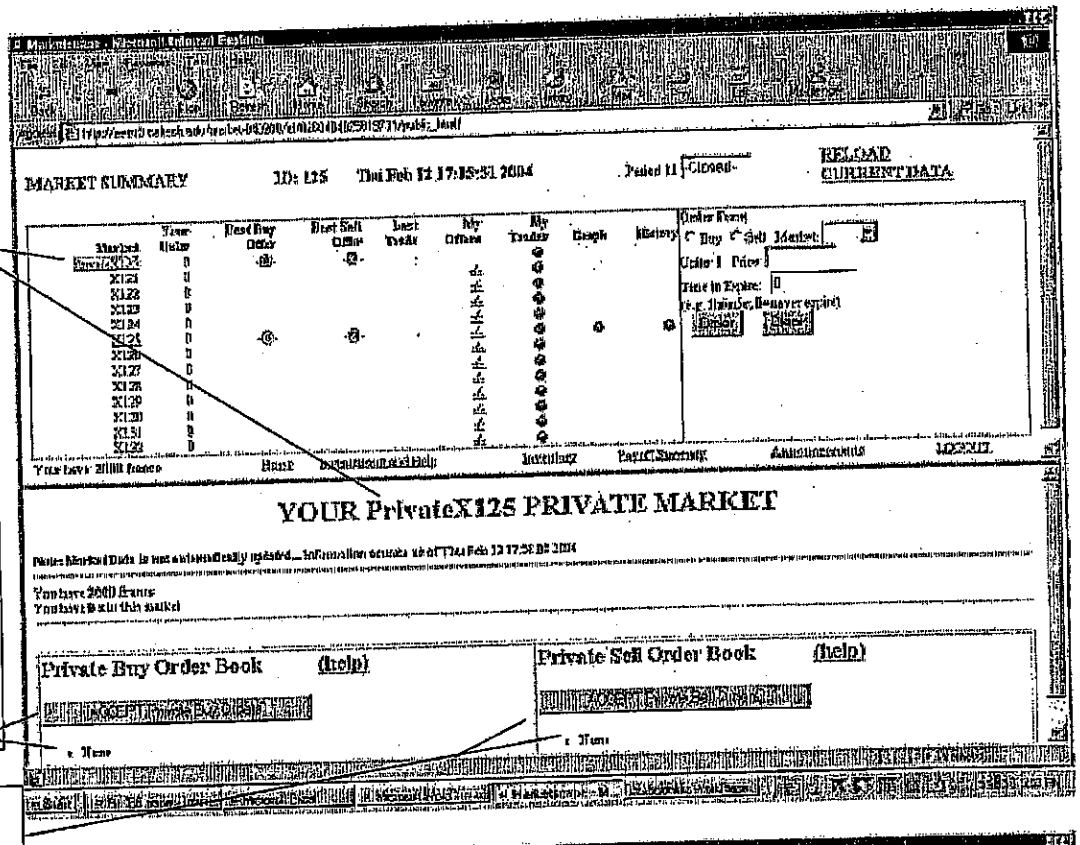
Click on your private market and you will see orders placed by the experimenter.

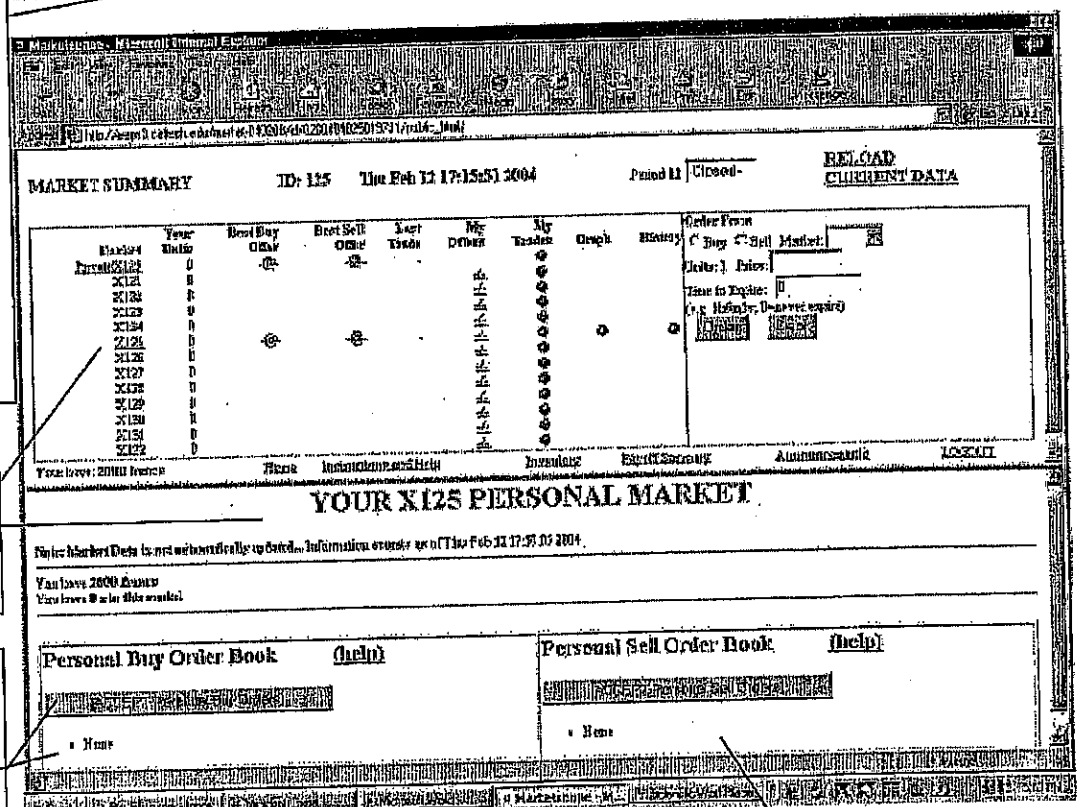
If you are a **buyer** you will be buying from others and reselling to the experimenter. You sell to the experimenter by accepting buy orders placed here.
Click on the order you want to accept and then click accept.

If you are a **seller** you will be selling to others the units that you buy from the experimenter by accepting sell orders that the experimenter places here.
Click on the order you want to accept and then click on accept.

Offers sent to you by others will be displayed here.

If you are a **seller** others will send you buy orders. They will appear here. Just click on the one you want and the click on accept.





If you are a **buyer** others will send you Sell orders that will appear here. Just click on the ones that you want and then click on accept.

Payoff Summary Link: Extra Information

This link provides a summary of your past earnings and payoffs. It also contains special information for the sellers (even numbers).

Sellers will have information about the minimum values that buyers (odd numbers) have for units. At the payoff summary link the sellers (even numbers) will find the following table.

BUYER NUMBER	Value of unit to buyer				
	1st unit	2nd unit	...	...	nth unit
X121	•	•	...	...	•
X123	•	•	...	...	•
X125	•	•	...	...	•
X127	•	•	...	...	•
X129	•	•	...	...	•

These numbers are a floor of the values that the buyers have in their private order book – the value for which they can resell the unit to the experimenter are at least this high. In some cases these values might be the exact numbers and in other cases these values might be lower than the exact values.

Exhibit B

Figure 1. The Important Features of the Demand for Electricity

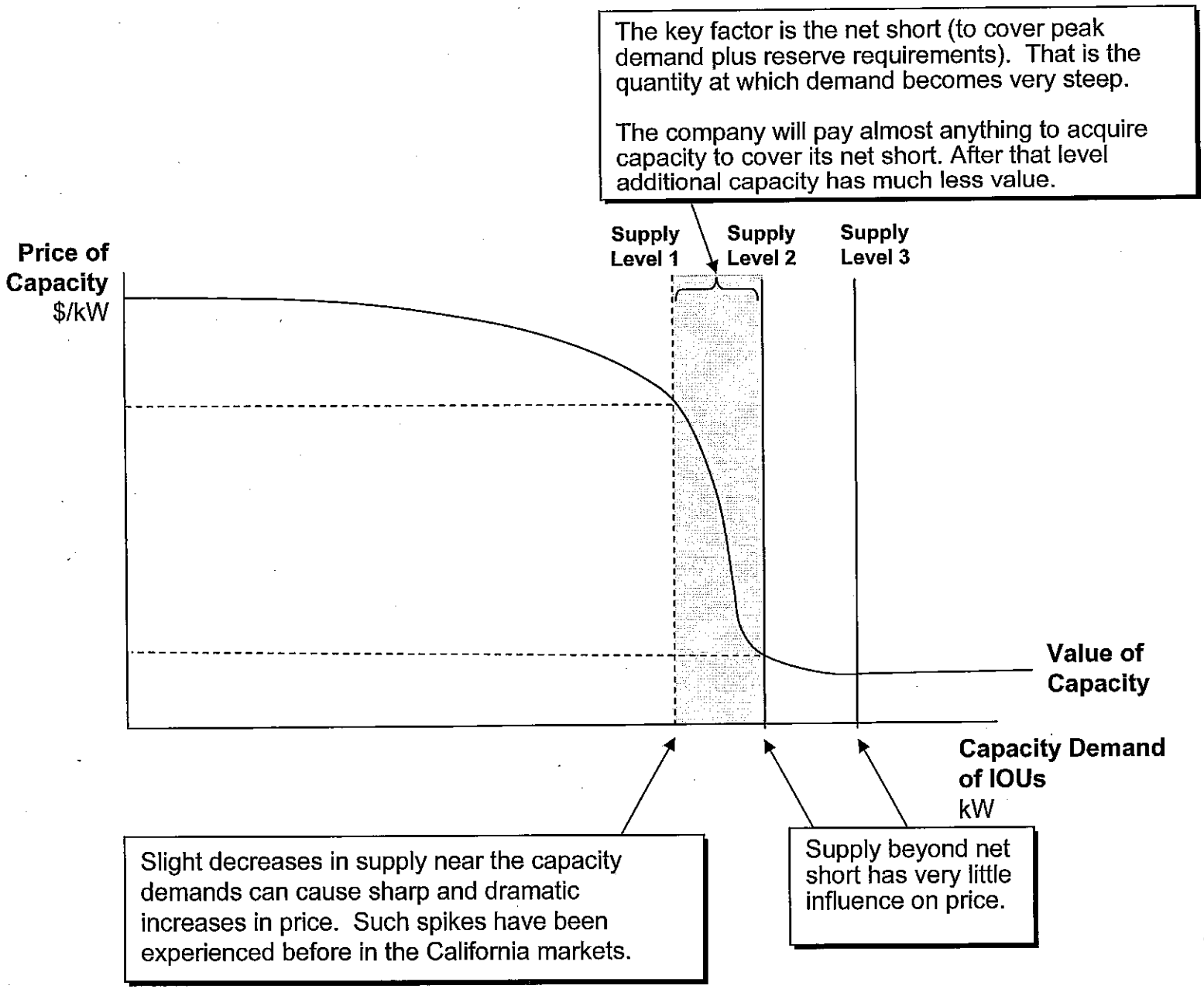
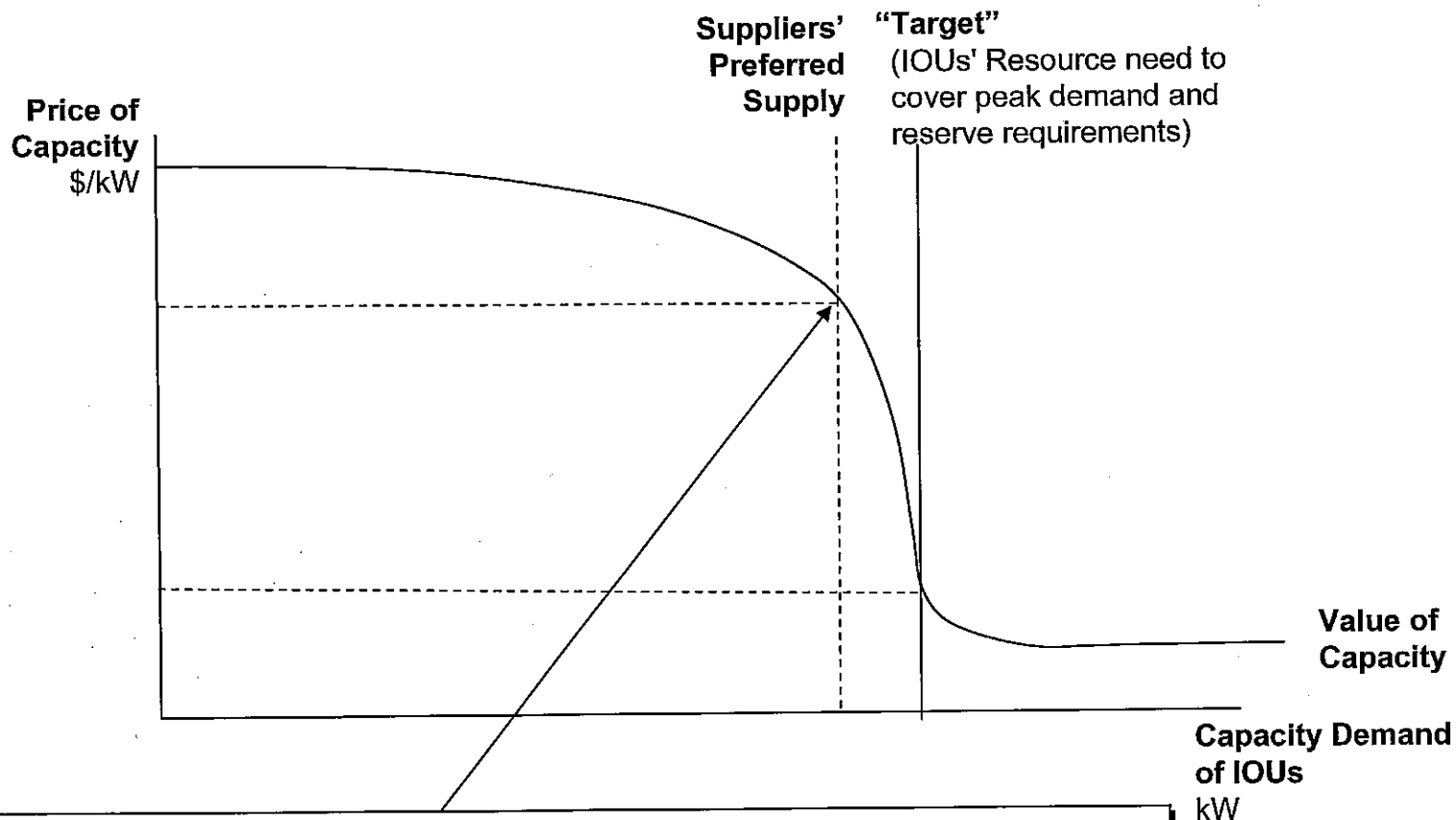


Exhibit C

Figure 2. Knowledge of Demand Curve and Coordinated Strategies Combine to Create Upward Pressures on Prices in the Marketplace



By knowing net short of the IOUs, each supplier has an incentive to hold back supply a little in the expectation of pushing up the price. The net effect is a reduced slightly less than what the IOUs need and this scarce supply relative to IOUs' need pushes prices up sharply:

- If supplies are short then the maximum amount that the company will pay is known to be high. Prices are kept low by the expectation that competitive suppliers will supply the company needs.
- If such sources of competitive supply are reduced below this target level then all suppliers will benefit from higher prices paid by the company.
- That knowledge creates an incentive for each to hold back a little with the collective result of higher prices.

Appendix 4

DECLARATION OF KEVIN R. CINI

I, Kevin R. Cini, declare:

1. I am Director of Energy Supply and Management of Petitioner Southern California Edison (SCE) and, as such oversee a department of approximately 90 SCE employees. I have primary responsibility within SCE for all issues concerning SCE's power purchases from conventional (non-renewable, non-Qualifying Facility) sources, including contractual, regulatory and litigation matters that arise in connection with such purchases. As part of my job duties it is my responsibility to remain current on proceedings before and decisions issued by the California Energy Commission ("Commission") the California Public Utilities Commission ("CPUC"), the Federal Energy Regulatory Commission ("FERC") and the courts dealing with electric power issues generally. I have a Bachelor's degree in Chemistry and a Master's degree in Business Administration from the University of California, Irvine. I have been employed by SCE in progressively more responsible positions since 1981. I have personal knowledge of the matters set forth herein, and I could testify competently thereto if called as a witness.

2. I am making this declaration to explain how a recent Notice of Intent to Release Aggregated Data, issued by the Commission's Acting Executive Director on June 3, 2005 ("Notice of Intent"), and attached to SCE's Petition for Writ of Administrative Mandate as Exhibit C, makes the release of the information that was the subject of the Commission's May 11 Decision even more damaging to SCE. This Notice of Intent is relevant to these proceedings, but was not available at the time SCE's appeal to the full Commission was filed and thus could not have been produced by SCE.

3. As noted in the Writ Petition, SCE has both "bundled customers" and "direct access customers." Bundled service customers are those for whom SCE

provides all electric services. For these customers, SCE provides not only the transmission and distribution lines and services that bring power to their homes and businesses, but the actual electric power supply that is transmitted over those lines. This power can be supplied from SCE's own plants, or via contracts SCE negotiates and enters with other power producers. The great majority of SCE's residential and small business customers are bundled service customers.

4. The second category of customers is "direct access customers." While SCE provides transmission and distribution lines and services to these customers, SCE is not responsible for procuring the power supply that is transmitted over the lines and that the customers use. Their power is supplied by independent Energy Service Providers, or "ESPs." Direct access customers contract with ESPs to provide them with their power supply, which is transmitted across SCE's lines. Direct access customers are primarily, but not exclusively, large businesses.

5. SCE's "total system" thus consists of both bundled service customers and direct access customers. (In other contexts, SCE's total system is defined to include wholesale transmission services that SCE provides, although the definition provided in the sentence above is most relevant for the purposes of this declaration.)

6. In essence, the difference between the amount of power SCE needs to provide its bundled service customers and the amount it actually possesses (owned or procured by SCE already) is called the "residual net short" or "net short." The "net short" that SCE needs to procure to serve the bundled customer load at peak, regardless of the time of that peak, is the primary subject of this declaration, and is sometimes referred to the "capacity net short." Since electrical power cannot stored, SCE has no choice but to obtain the minimum required amount of electrical capacity to reliably supply power to its bundled customer load at peak, or to create an unacceptable risk of having to interrupt service.

7. In other contexts, "net short" can refer to the amount of electrical capacity that SCE needs to procure to meet the monthly peak need, or can refer to the amount of electrical energy that SCE seeks to procure for a daily, monthly or quarterly block of hours, such as the industry-defined "on-peak" hours or "off-peak" hours (or all hours of the block – the so-called "flat" product).

8. In contrast, "net long" refers to the electrical energy that SCE seeks to sell in the market, typically for a daily, monthly, or quarterly block of hours. In any case, the "net short" or "net long" position is market sensitive information because it conveys the quantity and product that SCE must procure or is seeking to sell into the market.

9. SCE is also subject to decisions of the California Public Utilities Commission that require SCE to procure minimum levels of electrical capacity to serve its bundled customer load at the annual peak and at each month's peak, regardless of the actual time of occurrence of these peaks. This minimum level is expressed as a fixed percentage (that is publicly known) of the bundled load forecast, not as an absolute number. Since the annual and monthly peak bundled load forecasts are the bases of SCE's required procurement, SCE has maintained this information as confidential.

10. In the latter part of 1996, California enacted Assembly Bill 1890 ("AB 1890"), which began the now well-publicized, failed deregulation of the California wholesale electricity market. Prior to deregulation, SCE served its retail electric customers using a generation mix from its owned generation, through contracts (predominantly long-term) between SCE and other utilities, and through long-term contracts with Qualifying Facilities (QFs). Because the power needed to serve SCE's customers came from its own generation, or was under contract, SCE's "net short" position was zero (or negative, meaning SCE had a surplus of electrical capacity above the minimum).

11. Following deregulation, various CPUC orders compelled SCE to sell all of its natural gas-fired generating units to independent third parties. The concept behind deregulation was that the transfer of utility-owned generation to independent third parties, along with the development of new generating facilities by such parties, in concert with a competitive wholesale electricity market and end-use customers' "direct access" to non-utility generation would reduce costs for electric consumers over time. The state established a spot market, known as the Power Exchange ("PX"), in which the wholesale price of electricity was to be set on an hourly basis through competitive bidding. The PX commenced daily trading on March 31, 1998.

12. The deregulated wholesale market for electricity in California did not develop as anticipated. For awhile, the deregulation scheme produced reasonable wholesale electric prices which were compatible with SCE's frozen retail rates. Beginning in about mid-2000, however, a combination of factors caused wholesale electric rates to skyrocket in California. Among other things, structural infirmities in the California and regional wholesale markets permitted rampant market manipulation by independent generators and power marketing companies. As a consequence of the market dysfunctionality described above, the PX suspended active trading on January 19, 2001.

13. For the next two years, the Department of Water Resources (DWR) procured power to meet the needs of SCE's bundled service customers, as well as customers of the other investor-owned utilities. Beginning January 1, 2003, DWR was no longer authorized to procure power for the customers of investor-owned utilities. On or slightly before that date, SCE started procuring power from the market. Nevertheless, since SCE sold many of its plants, its "net short" requirement was significant.

14. If a market participant or market participants became aware of the magnitude of SCE's "short" position for any particular period, that market

participant or all market participants collectively could and would charge or bid a higher price than otherwise to sell power to SCE. Market participants would realize the "shorter" SCE's position (i.e., the greater the quantity of power SCE needs to buy), the more pricing power and leverage they could exercise over SCE. Similarly, data enabling an energy supplier to determine SCE's net long position would allow the supplier to know the quantity of power SCE is seeking to sell. Advance knowledge of SCE's "short" or "long" positions allows market participants the opportunity to accumulate positions in advance of SCE's transaction activity, enabling them to exercise even greater pricing leverage over SCE.

15. I have reviewed the Decision attached as Exhibit A to the Writ Petition. It would allow the Commission to make public SCE's forecast of the Bundled Customer Peak and Direct Access Peak. If power producers knew this peak annual number, and also were able to determine from other sources how much power SCE already secured, those generators could determine SCE's net short, i.e., how much power SCE needed to buy. This information would give prospective suppliers a significant advantage in negotiations for supplies of power. Much of SCE's existing supply information, however, is already in the public domain. Although the supply information may take homework on the part of a market participant to obtain, fairly comprehensive information could nevertheless be obtained.

16. For the same reasons, SCE's forecast of the Direct Access Peak is not provided to the public. This is because SCE's total system is composed of both bundled service and direct access customers. Thus, if power producers knew the Direct Access Peak annual number, and SCE's Total System Peak, they could subtract the Direct Access Peak and arrive at the Bundled Customer Peak.

17. All Energy Supply and Management personnel are instructed that the Bundled Customer Peak, Direct Access Peak, net short and net long positions, whether they be computed hourly, monthly, quarterly or annually, are SCE trade

secrets and are not to be disclosed outside the company, except on a confidential basis to government agencies.

18. Exhibit C to the Writ Petition is a letter of the Acting Executive Director of the Commission dated June 3, 2005 and the Notice of Intent. The Notice of Intent contains three proposals.

19. "Proposal 1: IOU Bundled Customer," ("Proposal 1") if implemented by the Commission, would allow the Commission to release SCE's "Net Peak Demand for Bundled Customers" on an annual basis for 2009 and forward. This is the same market-sensitive information (other than the first three years) as released by the Decision which SCE is asking this Court to review. Proposal 1 would also allow the Commission to release SCE's Bundled Peak Demand on a quarterly basis.

20. Proposal 1 goes further than this Decision, however, in showing SCE's "existing and planned contractual resources." These are the resources SCE has or will have to serve its bundled service customers. A market participant who couples this data with the Bundled Peak Demand will know SCE's annual net short – the gap which SCE will need to fill. Indeed, Proposal 1 appears to provide SCE's generic resource needs, i.e., net short and net long, on both an annual and a quarterly basis. As noted above, there is already considerable public information available on SCE's supply. However, Proposal 1 appears to provide complete information on the net short to market participants for 2009 and beyond in a simple format and readily understandable format.

21. As Dr. Plott has stated: "To see how this could harm SCE's customers, it helps to look at a simple example. For example, if you're a quarterback, the best way to make sure the fans see your team score a bunch of exciting touchdowns is certainly not to invite opposing team members into your huddle. Just as you know you should withhold information from the other football team, you also know that you should hide your cards from your poker competitors,

and that you should avoid telling the used-car salesman how much money you can spend on a car."

22. Thus, the impact of the Decision to permit public disclosure of the Bundled Customer Peak and Direct Access Peak is exacerbated by the Notice of Intent. The Notice of Intent would release supply-side data – how resourced SCE is. The Decision, if not set aside, would release demand-side data – how much SCE's bundled service customers need. This information, combined with other publicly available information, provides a fairly comprehensive assessment of SCE's needs to buy and sell power in the competitive marketplace.

23. Since SCE's customers pay for power, it is they who will ultimately be harmed should market participants see it and use it to their advantage.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on June 9, 2005 at Rosemead, California.

KEVIN R. CINI